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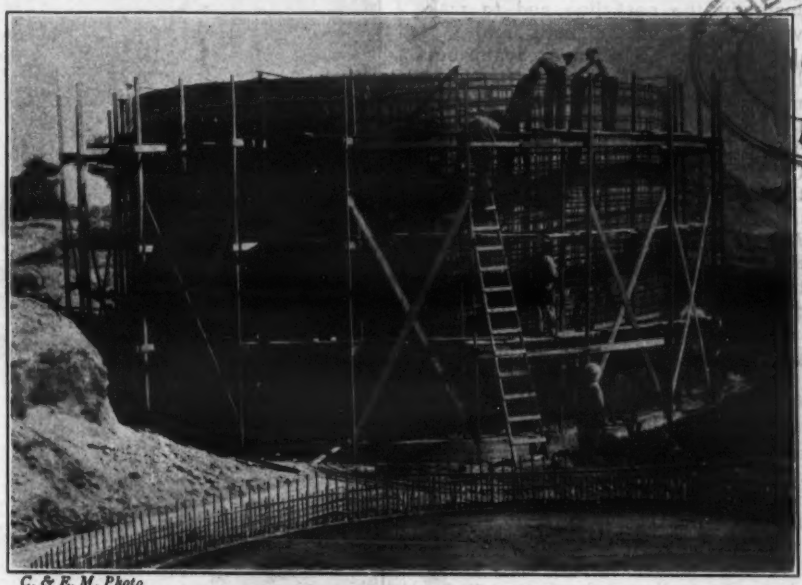
# Contractors and Engineers Monthly

Vol. 46, No. 11 NOVEMBER, 1949 $3 a Year, 50 Cents a Copy


## Covering the Field

- **Sewage Plant**
  Small quantities were involved in the job reported on this page, but concrete pouring was tricky indeed.
- **AASHO Meeting**
  Delegates and speakers in San Antonio got plenty off their chests, especially about truck overloads on our highways. Page 1 tells what they had to say.
- **Bridge Construction, Reconstruction**
  Headwork saved formwork on the parkway bridge job described on page 2.
  Precast-concrete highway bridges are erected in double-quick time to replace old timber structures—see page 73.
- **Apartment Building**
  A 19-story apartment house with a reinforced-concrete framework goes up in New York City. Complete account starts on page 5.
- **Bituminous Paving**
  Five miles of road-mix 24 feet wide and 2 inches thick in near-record time—4 days. That's the story on page 11.
  On page 56, an old concrete pavement is topped with bituminous concrete.
- **Bonny Dam Begun**
  Dirt work on the $10,300,000 flood-control project for the USBR is covered in an article on page 17.
- **Dump Stabilized**
  A 50-ton pneumatic-tire roller compacts a city dump to give it enough bearing value to support a highway fill. The experimental work is described on page 24.
- **Winter Maintenance**
  As told on page 31, Maine uses salt liberally to keep roads ice-free. It also places around 800 miles under contract for winter snow removal.
- **Railroad Tunnel Lined**
  Pictures on pages 36-37 trace concrete-lining operations from batch plant to mixer to Pumpcrete line to point of placement.
- **Airport Enlarged**
  Rain and the fact that only one runway at a time could be closed to flying bedeviled the contractor as he graded, processed base material, and paved (page 41).
- **Portrait in Print**
  As a kid he haunted boats; as a young man he studied marine engineering; now, at 50, he's a highly successful dredging contractor (page 45).
- **Power Line Across Desert**
  A mobile camp that moved along in 20-mile jumps accommodated an 80-man crew as it built the towers for a transmission line to tie Colorado River dams to southwest cities. See page 50.
- **Concrete Paving**
  A contractor's dream was realized on this 3-mile paving job—the ideal batch-plant set-up. Read about it on page 67.
- **Equipment Care**
  It's a man-sized assignment at Bonny Dam, where the equipment investment runs into several hundred thousand dollars—page 86.


*(You will find "In This Issue" on page 4)*

*C. & E. M. Photo*
**Form and steel work is under way on the north digester of the Mesa sewage plant. In the foreground is part of the water-cured base of the south digester.**

# Contractor Builds City Sewage Plant

## Old Pollution Hazard Replaced by a Modern Reinforced-Concrete Sewage-Disposal Plant

✦ THE City of Mesa, Ariz., can rightly boast about one of the most ideal sewage-disposal conditions in the United States. Yet, ever since the city was founded, the disposal of its sewage has been a never-ending source of pollution to underground water resources north of the town.

Today—after ten years of planning and fighting for the passage of a bond issue—contractors and engineers are taking care of the situation. Only six weeks after work began, the new $160,000 contract on the plant was a third finished. By the first of September, 1949, the new facilities were expected to pass their final tests and be in operation.

Mark Cockrill Contracting Co., Inc., of Phoenix had the contract, and the design and engineering for the City of Mesa was under supervision of the Phoenix consulting-engineer firm of Headman, Ferguson & Carollo. The contract included all construction and equipment to activate the new plant, and in addition, Cockrill had some 6 miles of outfall sewer line under construction for the City.

### New Plant Has Excellent Site

The site of the sewage plant is as nearly ideal as nature could make it. Raw sewage flows by gravity down a natural gradient from Mesa toward the Salt River bottoms, about 2 miles north of town. Even here, the sewage plant is so arranged that the material will pass by gravity through the plant, with the exception of sludge, which is to be handled between digester tanks and sludge beds by pumps.

Despite this nearly ideal condition, Mesa continued for the past 30 years to dump raw sewage into an old concrete tank near the present plant. Water seeped off underground, to pollute near-by wells and endanger the underground water supply.

The new plant is situated only 200 feet west of the old tank. Landscaping and roadway work will obliterate the unsightly concrete tank, now largely rotten anyway.

In order of its use by sewage entering the system, the plant has a bar screen, a grit chamber, a Parshall flume, a primary sedimentation unit, primary and secondary digester tanks with a digester control house between, sludge-drying beds, and a waste-gas burner. At the present time no chlorination of


*(Continued on page 78)*


# AASHO Hits Truck Overloads on Roads

## Highway Officials Meet in San Antonio to Discuss Problems: Elect Greer Of Texas, President

✦ THE rapidly rising cost of highway maintenance throughout the country was viewed with alarm at the 35th annual meeting of the American Association of State Highway Officials held in San Antonio, Texas, October 10-14. From the opening day's general session until the windup of the convention, the great damage constantly being done to highways by overloading them was repeatedly emphasized. This signal attention to the destructive effects of overloading highway vehicles culminated in the passing of a resolution urging all states to enforce their loading laws, and furthermore to adopt the AASHO standard of 18,000-pound maximum single-axle load in those states which now legally sanction greater weight. The resolution also urged all highway users and shippers to refrain from abusing the public highway systems by overloading.

Part of the business of the convention—the selection of officials for the coming year—resulted in the election of Dewitt C. Greer, Texas State Highway Engineer, to the post of President. For First Vice President, the Association chose James A. Anderson, Commissioner of the Virginia Department of Highways.

### 1,200 Attend

At the general session opening the convention, some 1,200 delegates, in-


*(Continued on page 82)*


**CONCRETE FRAMEWORK FOR 19-STORY BUILDING**

*C. & E. M. Photo*
**The first-floor slab of a 19-story New York City apartment building goes in, with a Manitowoc Speedcrane handling the concrete bucket. Cauldwell-Wingate Co. is general contractor on the structure—one of the tallest in this country built with a reinforced-concrete framework. See page 5.**

# Simple Trick Saves Concrete Form Work

## Ditch Digger Outlines Pour Limits for Bridge Abutments; Clamshell Then Finishes Digging

By RAYMOND P. DAY,
Western Editor

✦ EXTENSIVE forming and backfill costs were saved, recently, when a contractor's superintendent chose to use his head instead of his carpenter gang on abutments and the center pier of a bridge in the Los Angeles Metropolitan Parkway System.

The job on which the money-saving trick was done was the Spring Street Overcrossing of the future Hollywood and Santa Ana Parkways. The contractor was Oberg Brothers Construction Co. of Inglewood. The Superintendent was Oscar Kringlen. Designed by the City of Los Angeles Bridge Department of the City Engineer's office, working under the authorization and general supervision of the California Division of Highways, the Spring Street Overcrossing is a reinforced-concrete structure whose contract cost is $200,000.

The structure is being built from a ground level perhaps 20 feet above the abutment and center-pier footings. Later on, when the parkways are cut through, this block of dirt will then be removed. In the meantime, Kringlen faced the difficult job of excavating the hard sand-rock formation for the two abutments and the center pier. The only plausible power tool to make the excavation was a clamshell, and the formation was so hard that a clamshell would make slow progress.

Kringlen solved the problem by renting a ditch excavator capable of digging to the bottom grade of the abutments and the center pier. Since the construction was all generally rectangular, it was simple to dig a ditch along the outside limit lines of concrete. The ditch was dug 2 feet wide, and down to grade. Excess dirt from the machine was dumped in a pile off the conveyor, and then after the ditch was dug the dirt was bulldozed back into the hole to maintain the neat line and to make working room in the small area.

In six days the trench excavator outlined the center pier and the two abutments, and moved off the job. It was then relatively easy for the Northwest ⅝-yard clamshell to move in and bite the hard center material away, because the clamshell bucket had soft material on each side to sink into to get started. After the structure excavations were made, and the material hauled away to the dump area, the footings were hand-dressed to neat lines and the heavy concrete pours were made without the necessity of forms up to ground line.

### Some Excavation Done

Approximately 11,000 cubic yards of excavation consisted of routine roadway grading. This yardage, which of course was moved before pier and abutment work could start, was localized within an area about 110 x 130 feet in downtown Los Angeles only two blocks from the Federal Post Office building on Spring Street.

Before starting this work, Spring Street was detoured around the work over an area previously graded under another contract, and the working area for the bridge was fenced in by Oberg Brothers to keep visitors and hundreds of "sidewalk superintendents" out.

*C. & E. M. Photo*
**In downtown Los Angeles, two blocks from the Federal Post Office building, Oberg Brothers Construction Co. builds an overpass which will eventually take Spring Street over Hollywood and Santa Ana Parkways. Traffic is detoured around the work area.**

A Northwest ¾-yard shovel was then put to work to take out the 12-foot-thick block of excavation. Hauling equipment consisted of a fleet of 8 to 10 miscellaneous dump trucks. The excavated material was trucked about 2 miles to a State-owned pit at Bishop's Road on Arroyo Seco, where it was dumped. All the material in the job was a very hard formation of sandy clay, with much hard oil shale underneath. A power shovel dug it without too much difficulty, but it was hard for other tools.

### Storm Drains Tunneled

The installation of permanent storm drains through the work area turned out to be the hardest problem of the job. The level of the storm drains was 35 feet below the working area. There was no room to make an open ditch, and whatever method was used was vulnerable to rain.

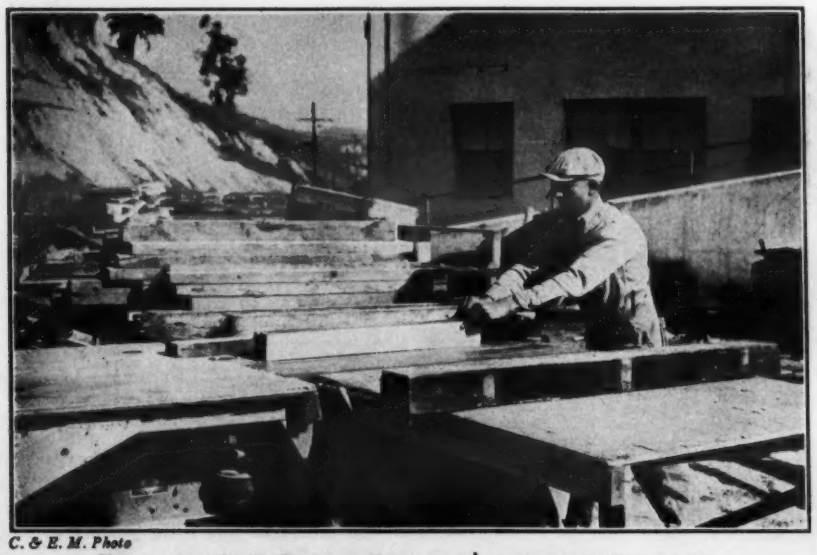
Storm drains consisted of 110 feet of 39-inch reinforced-concrete pipe, with 27 feet of 18-inch pipe on a 45-degree angle and 18 feet of 27-inch pipe on the west end. On the east end of the drain a 12-inch main had to be installed from street level down 35 feet to the storm drain.

It was therefore decided to install all this pipe by tunneling far underneath the ground.

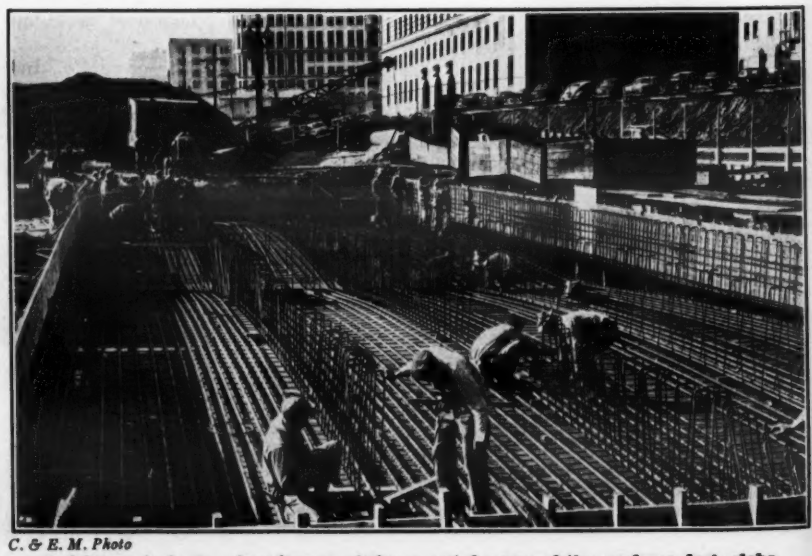
Shafts were first clammed out at each end of the storm drain. A hole 5 feet square was then tunneled, using a crew of three men, wheelbarrows, three pneumatic clay spades, and a Chicago

(*Continued on next page*)

*C. & E. M. Photo*
**This detailed view shows better than words can how deck-slab pours for the overpass were formed and supported. Plywood sheets will be nailed to 2 x 6 cross members.**



*C. & E. M. Photo*
**Here a carpenter in the job yard uses a power saw to cut form lumber.**



*C. & E. M. Photo*
**And here, steel men place heavy reinforcement for one of the roadway deck slabs.**

*C. & E. M. Photo*
**Philip Griffin of the California Department of Public Works (left) stands beside General Superintendent Oscar Kringlen for the C. & E. M. cameraman.**

Pneumatic 105-cfm portable compressor for air power. The oil-shale formation was so solid that no bracing was necessary either in the shafts or the tunnel. The material was mucked out, wheelbarrowed to the shaft, and loaded out occasionally by the clamshell.

For the smaller-diameter pipe, a hole 2 x 3 feet was tunneled. After the pipes were installed, the space was backfilled with sand.

### Bridge-Design Details

The Spring Street Overcrossing is a reinforced-concrete structure designed for H20-S16-44 live loading, with a maximum bearing pressure of 3 tons per square foot on the earth. Clear openings of 58.5 between the center pier and the abutments will pass the two parkway lanes of traffic.

The upper deck at the level of Spring Street consists of two roadway decks 25½ feet wide, separated by a 19-foot railway section over which streetcar tracks will pass. A 9½-foot sidewalk is on each side of the bridge; 5½-foot planting areas on the outside of each sidewalk will be landscaped and planted.

From paving notch to paving notch, the bridge measures 129 feet.

Some 425,000 pounds of steel reinforcement are distributed throughout the 1,650 cubic yards of Class A concrete, and the 120 cubic yards of Class B concrete. The latter is primarily in curbs, gutters, and sidewalk.

The design of the sidewalk as a monolithic pour with the main bridge slab complicated forming somewhat, but extra carpenter work solved the problem.

### Concrete-Forming Details

The exposed faces of all concrete were formed against ⅝-inch plywood form facing, covered with a light coat of form oil. Unexposed faces, or those covered by backfill were formed with ordinary surfaced 1 x 6 shiplap material. Two x 4-inch studs at 12-inch centers were used on exposed faces, while on unexposed faces the stud centers were 16 inches.

Wall panels, girder stems, and deck boxes were all prefabricated on the job in a carpenter yard, and the sections numbered. They were then lifted into place by one of the Northwest machines, or if not too heavy, placed by the carpenter gang.

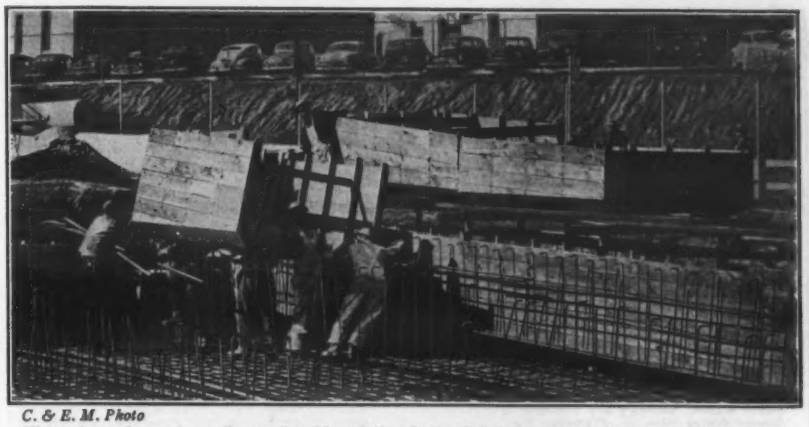
To support the weight of deck forms and concrete, 4 x 12 ground sills were laid usually on 4-foot centers. Four x 4's and 4 x 6's were placed upright on 4-foot centers, and capped with a 4 x 6 timber. Two x 6's were toe-nailed to this cap on 12-inch centers and covered with nailed plywood facing.

Deck screeds were set in an interesting and foolproof manner. Steel form bolts were set in the top of the fresh wall concrete, usually on 5-foot centers. The double 2 x 4 screeds were then set on these form bolts later on, after the pier and abutment concrete had hardened. The screeds were secured by a nut above and below, preventing movement up or down. It gave an excellent reference to work to.

### Concrete Pouring

Concrete pouring in general was handled by a fleet of Blue Diamond Material Corp. truck-mixers, which hauled the concrete from a commercial plant about 2 miles away. When the truck-mixers arrived on the job, they discharged their concrete to a 1-yard Gar-Bro concrete bucket, which was in turn swung out over the pour by the Northwest ¾-yard machine rigged as a crane.

The concrete was vibrated internally by electric vibrators, and the decks were finished off by ordinary wood floats. Later on the concrete deck will be covered with 2 inches of asphaltic concrete, so no fine finishing was necessary.



*C. & E. M. Photo*
**This view shows how the underside of the deck slab between girders was blocked out by prefabricated wood boxes, being placed here by the carpenter gang.**

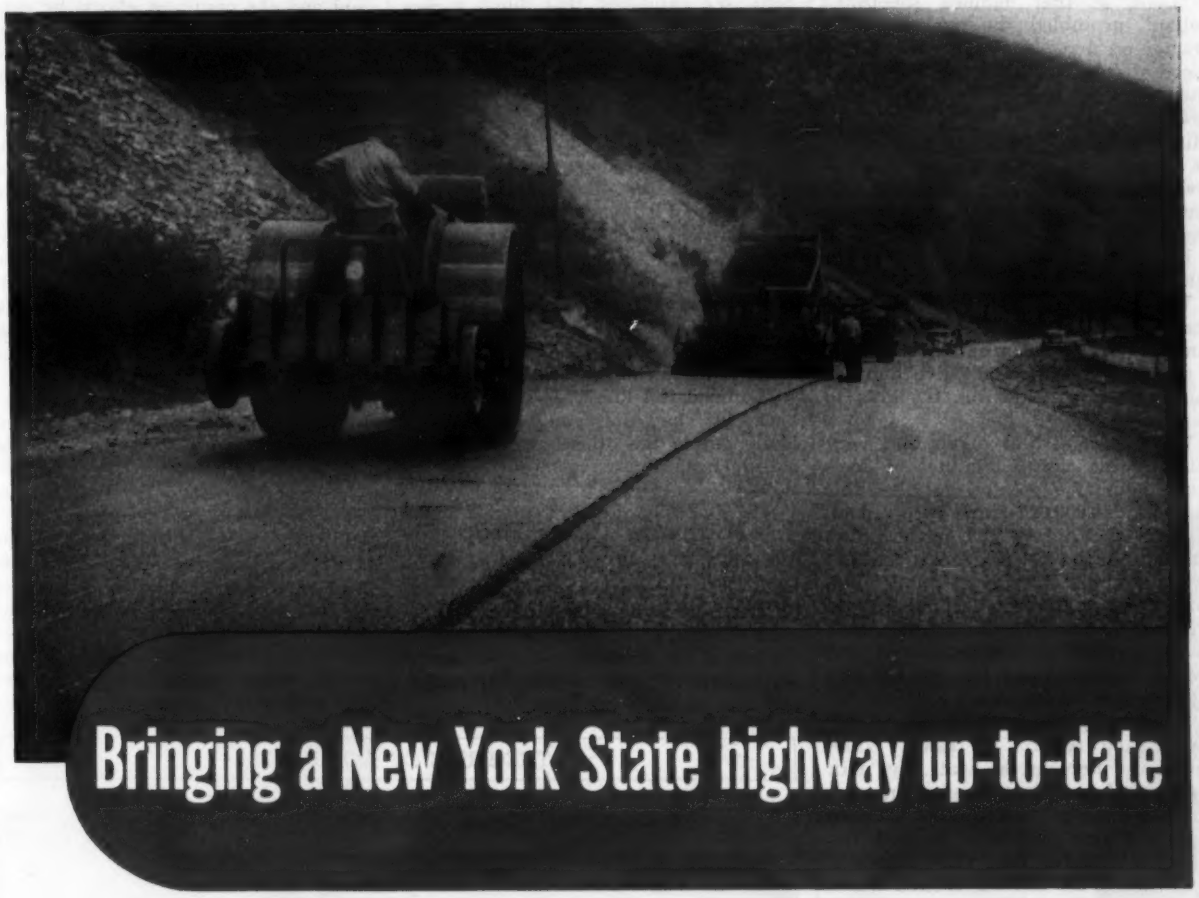
In those places where it was impossible to reach out with the crane, the concrete was dumped direct to a transfer hopper and buggied to the point of placement.

After the pour, the fresh concrete was cured out by keeping it wet with damp burlap.

### Personnel

The Spring Street Overcrossing is a

(*Continued on page 15*)

Bringing a New York State highway up-to-date

Resurfacing five miles of New York State Route 17 in Delaware County with a two-course Texaco Asphaltic Concrete pavement, three inches thick. Prime contractor, D. F. McNamee, Inc., New Rochelle, N. Y. Asphalt mix furnished by Sullivan Highway Products Corp., Liberty, N. Y.

This 5-mile section of New York State's Route 17 had become obsolete. It was too narrow and its pavement inadequate for today's traffic. Last summer, the State modernized this highway by widening it two feet on either side, then constructing a two-course Texaco Asphaltic Concrete pavement of the hot-mix, hot-laid type over the full width. New York specified a compacted thickness of three inches for the new asphalt pavement, a 1½-inch binder course and 1½-inch wearing surface.

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TEXACO ASPHALT

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**For the Highway and Heavy-Construction Industry**

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## Incomplete Employee Relations

"Look at that damned sheepsfoot roller," grumbled the operator of a tractor on a big dam job. "It's only a piece of steel, but it means more here than a man does. Machines like this are taking the bread out of our mouth, Mister. I hear they get paid something at least in the east when it rains, but we're lucky to get three shifts a week out here. We starve while the company makes millions."

Have you heard that kind of talk lately, Mr. Contractor?

We have, and we regard it as a shame. It's a shame for a man in America to be that misguided, and it's a disgrace that we don't give him the information to shape his thoughts to better purpose.

We tried our best to do that very thing in the closing minutes of Joe's lunch hour. We pointed out that this was a 10,000,000-cubic-yard dam. Without the aid of the modern dirt machines of the last 15 years it couldn't have been built. Maybe we sounded like Little Orphan Annie preaching, but we said that big jobs like this one depended on the creation of that equipment, and the willingness of men like Joe to make it perform at its top capacity.

"You really owe your living to this tractor and roller," we said. "When you're up there in the seat, boy, with the sheepsfoot rollers hanging on your drawbar, you're worth 100 Chinese coolies. Figure out how to pull the roller in a faster gear than first and you're worth 200 Chinese coolies. Why? Because you can do more work than they can. That's why the company can afford to pay you the wages it does. They aren't bad, either."

"Yeah, but what about all the men this machinery replaces? What happens to them?"

"They aren't really replaced, Joe. Part of them worked at building this roller—a job they wouldn't have had if dams were still built by hand labor. The others are free to build and operate other rollers. Can't you see that a mechanized mode of living creates more things for more people by boosting everybody's output?

"Nearly 100 dams are under construction now. Do you believe they'd be under construction if you had to move the dirt with baskets, or even with mules and fresnoes?"

Joe grinned agreeably and said, "I guess you're right about that; I'd never thought about it that way. But you know it ain't right for these companies to make millions out of a dam like this."

Some of the big Eucs were starting up and pouring their heavy loads of dirt out on the fill, but Joe listened while we explained that the average margin of profit, reported by the Chicago First National Bank on all its contractor loans, averaged only 3½ per cent. We explained that much of the AGC convention program was devoted to that subject, and that contractors and other businessmen were alarmed over the low margin of profit.

"Well I'll be damned. You know that's surprising!" Joe exclaimed. "Thanks for giving me the dope, Mister . . . you don't sound like a man with an axe to grind so I'll believe you. Makes me feel a little better about running this rig."

He reached for the throttle, yanked it back, and touched the starter. As the big HD-19 came to life he yelled, "But why in hell don't they tell us some of these things?"

"Damned if I know, Joe," we yelled back. "If they did, you'd more than likely get to the other end of the fill a little faster!"

### Highway Costs Drop

A decline in road-construction costs from last year's price peak is reported by the Bureau of Public Roads. Bids have dropped 6 per cent. The sharpest decline is on structures—9.5 per cent; excavation is down 7 per cent, and concrete paving 6 per cent.

## Construction Outlook Is Good, Reports AGC

In a speech which opened the mid-year meeting of the Governing and Advisory Boards of the Associated General Contractors of America, Inc., at French Lick, Ind., President Adolph Teichert, Jr., stated that the nation is now entering a period of stabilized peacetime operations for the first time in a decade, with a high volume of public work.

Mr. Teichert's optimism about the outlook for construction was borne out by the results of a survey conducted by the AGC among its local organizations for study at this meeting. It indicates that business conditions are stabilized for the construction industry.

Construction costs on a national scale are at an estimated 10 per cent below the wartime peak. Contractors report adequate supplies of materials, machinery, and man-power, with a noticeable increase in productivity and efficiency. A part of this increase, the survey suggests, may be attributed to an increase in competition within the field and the resultant efforts by contractors to minimize their overhead. The replies to the survey show a general expansion in activity during the mid-1949 construction season and a capacity for further expansion in all categories of construction. The contractors point out that the stabilization revealed means a full return to the public for investment in construction.

A breakdown of survey findings by major construction classifications shows that industrial, commercial, and residential construction are below last year's volume. Public and institutional building is increasing as governments, national and local, and private organizations begin to take advantage of declining costs. However, a lack of adequate funds or plans, the survey finds, has hampered the highway and heavy-construction industry except in states where toll roads are increasing.

With the survey results in mind, the AGC said that the most immediate problem facing the industry was not the threat of a depression, but the possibility of "changes in the basic functions of the contractor". A trend on the part of some government bodies to perform their construction with their own forces when contract construction would be more economical was condemned by the meeting. Building contractors denounced the practice of awarding separate contracts; they said it deprives the general contractor of his vital function of centralized responsibility for the construction of a project. The AGC also recommended to Federal agencies that "in certifying or establishing wage rates in various areas, the action be taken in such a manner that it does not disrupt the actually prevailing wage rate or supplant the normal collective bargaining procedures of the construction industry."

Walter L. Couse, President of the Walter L. Couse Co., of Detroit, Mich., was nominated for President in 1950, to succeed Adolph Teichert, Jr. Glenn W. Maxon, President of the Maxon Construction Co., Inc., of Dayton, Ohio, was nominated to succeed Mr. Couse as Vice President.

Delegates were invited to the 31st annual convention of the AGC to be held in San Francisco, February 27 to March 2, 1950.

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### Advance Planning, Theme Of Public Works Congress

Long-range planning of public works was a major topic at the recent 55th Annual Public Works Congress and Equipment Show at Kansas City, Mo. Nearly 1,000 members of the American Public Works Association were on hand for the opening session, a panel discussion of planning. Another session on financing was equally timely in view of the demand for new schools, improved streets, and expansion of water and sewer facilities.

Speakers pointed out that public works projects planned well in advance can be launched promptly in times of depression or recession to relieve unemployment; at the same time, they contribute to the permanent welfare and assets of communities. But there is still another, more selfish reason for states and cities to engage in adequate advance planning, pointed out Robinson Newcomb, Council of Economic Advisers, Executive Office of the President. It is a means of reducing unnecessary expenses and getting the most for money spent. Public officials are as responsible for the functioning of the U. S. economy as are officials of private corporations, Newcomb emphasized.

In resolutions made at the final business session, members of the American Public Works Association urged Congress to adopt legislation enabling the Federal government to make advances to states to help finance surveys, plans, etc., for public works.

In another resolution they urged "a more just distribution of highway-user funds by allocation of more equitable percentages of such funds to municipalities for the construction and maintenance of urban streets, highways, and expressways."

### THE PRICE OF ACCIDENTS

**This man fell 30 feet on hard concrete. His skull is fractured. The accident means suffering for him—for the contractor, money out of pocket, lost time.**

# Concrete Framework For Apartment House

## 19-Story Building Is One Of the Tallest of Its Type; 4,000-Pound Concrete Is Used in Columns

By WILLIAM H. QUIRK,
Eastern Editor

*Photo on page 1*

✦ A 19-STORY and penthouse apartment building in New York City is being constructed with a reinforced-concrete framework. It is one of the tallest structures of its kind built in this country up to now, using that type of construction. The big building on Manhattan's upper east side has 4,000-pound concrete in its lower floor columns to keep their size to a minimum. Thus the space saved is used for floor area in the apartments.

The building is under construction on the site of the old Third Avenue Railway car barns that occupied the block running 610 feet from Third Avenue east to Second Avenue, and 160 feet from E. 65th Street north to E. 66th Street. The two avenues are 100 feet wide, while the intersecting streets are 60 feet in width. E. 66th Street is being widened to 100 feet on the block, to provide an approach drive for local traffic into the building. These approaches to the north side of the building are separated from street traffic by a mall.

One of the country's major life-insurance companies is undertaking this development, which will cost in excess of $10,000,000, as part of a diversified program of equity investments in rental housing. Cauldwell-Wingate Co., Inc., of New York City is the general contractor. Construction got under way on April 6 of this year, and the building is expected to be ready for occupancy by autumn of 1950. It will contain 582 apartments having a total of 2,486 rooms. The apartments range in size from 2 to 7 rooms, with the majority falling in the 3, 4, and 5-room classification.

Outside dimensions of the building are 590 feet 11 inches x 108 feet 9 inches, with recesses along the north and south sides making each apartment an outside one. This provides the maximum light and air for each room. While the single large building runs full length through the center of the block, it occupies only 60 per cent of the site area, the remaining 40 per cent consisting of landscaped gardens on the north and south sides of the development.

### Five-Unit Building

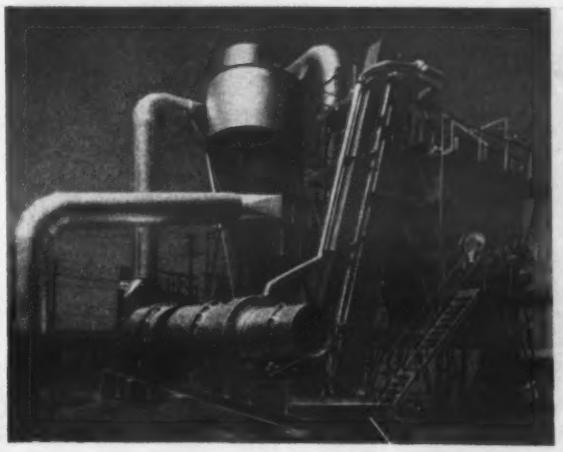
The structure is built in 5 units or sections connected only by a first-floor lobby that runs the length of the building, and with a common roof. This layout assures the minimum of waste space since the halls and corridors on the multi-floor building are short, with the maximum of available area given over to living quarters. Each unit is served by two passenger and one service elevators.

Of the 582 apartments, 95 per cent have either through or cross ventilation. Out of 32 apartments on a typical floor, 18 will have southern exposure, 8 will have both a north and south exposure; and 20 of the apartments will have a corner exposure. An underground garage at basement level will accommodate 175 tenants' automobiles. It is reached by a ramp descending from the southeast corner of the block at Second Avenue and E. 65th Street. The garage is partially under the landscaped portion of the development, and its roof will be covered with a dirt fill and made into a garden.

### Excavation and Foundation

D'Aquila Bros. Contracting Co., Inc., of New York City excavated the site under a subcontract. The massive old red-brick car barn had been razed last year, but its sturdy foundations remained to be dug and blasted out. The depth of excavation varied from 35 feet below street level at the Third Avenue end, to 20 feet at the east or Second Avenue side. More than 85,000 yards were removed which, besides the old foundations, included rock, boulders, hardpan, and clay. Little sheeting was required around the perimeter of the hole, the stiff banks holding to vertical sides without the need of

(*Continued on next page*)

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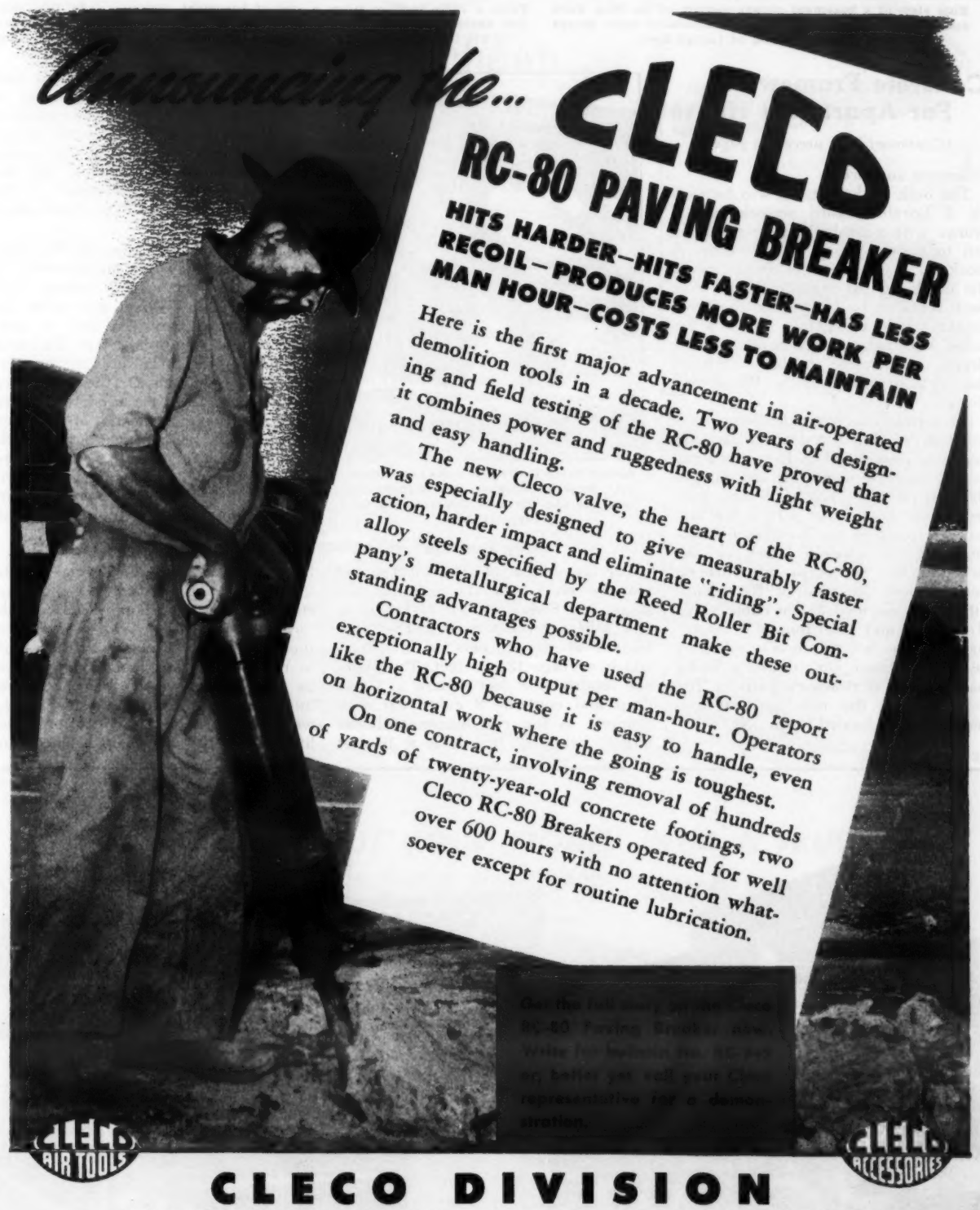
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Here is the first major advancement in air-operated demolition tools in a decade. Two years of designing and field testing of the RC-80 have proved that it combines power and ruggedness with light weight and easy handling.
The new Cleco valve, the heart of the RC-80, was especially designed to give measurably faster action, harder impact and eliminate "riding". Special alloy steels specified by the Reed Roller Bit Company's metallurgical department make these outstanding advantages possible.
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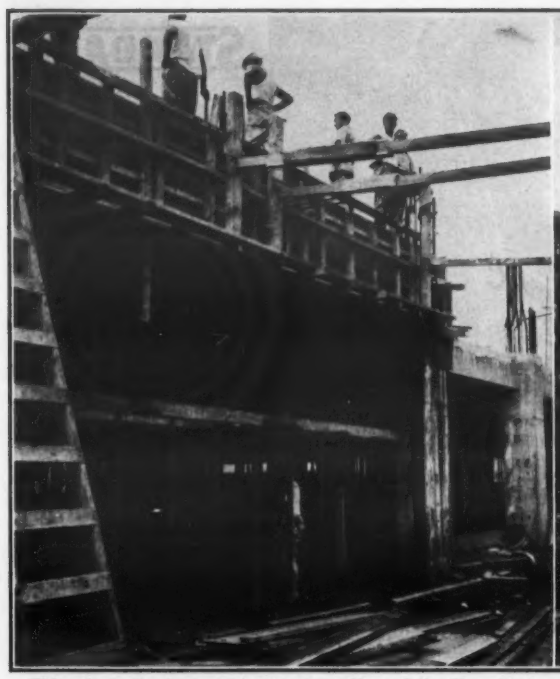

This view of a basement garage section of the New York apartment building shows Acrow adjustable steel shores supporting a beam 14 inches deep.

From a little farther away, a row of basement columns. The average reinforced-concrete column in the structure is 2½ feet square, but a few special ones run larger.

At the first-floor level, Acrow shores again in service. The distance here from floor to ceiling is 14 feet 6 inches. Notice the hoist tower in the background.

## Concrete Framework For Apartment House

(*Continued from preceding page*)

extensive support.

The bulk of the digging was handled by 2 Lorain 2-yard shovels and 2 cranes with clamshell buckets loading out to a fleet of up to 40 trucks. A work ramp was first constructed along the north side of the site. It has now been replaced by one at the southeast corner where the garage ramp is located. The material was hauled to The Bronx, and wasted in the vicinity of the north approach to the Whitestone Bridge.

No serious drainage problems were encountered. Surface drain water was promptly disposed of by Homelite 2 and 3-inch gasoline-engine-driven pumps. By May 19 the excavation had proceeded far enough to permit the first concrete pour on the building foundation. All the concrete work on the structure was sublet to the Corbetta Construction Co., also of New York City. This included 38,500 cubic yards of concrete and 4,500 tons of reinforcing steel. The latter item is supplied by Bethlehem Steel Co., delivery being made to the contractor's yard in The Bronx where the rods are cut and bent and later hauled to the job.

Albert Greig (left) and James B. Lyttle are Superintendents for Cauldwell-Wingate and Corbetta Construction Co. respectively.

### Heavy Footings

The foundation consists of 300 spread footings on which the columns are supported. Some rest on 40-ton rock, and others on 6-ton soil. They are located at the corners of the bays which average 12 x 20 feet. The average footing is 8 feet square x 3 feet deep and contains 8 cubic yards of concrete. A few run bigger, with the largest being 22 feet long x 12 feet wide and 4½ feet deep. Around part of the perimeter of the building is 1,500 linear feet of combined retaining and foundation wall that is tied to the basement slab and the first-floor deck; this wall is 16 inches thick. All the concrete, with the exception of the 6-inch basement floor slab, is reinforced with steel rods.

The average column is 2½ feet square, but a few special ones run to large sizes—such as one column that measures 3½ x 4½ feet and takes for reinforcing 52 bars, 1¼ inch in size. The 16-foot reinforcing cage that was assembled for this lift of column weighed over 3 tons. On the wall pours Atlas steel forms are used, while the column forms are made of Douglas fir plywood, ⅝ inch thick, backed with 2 x 4 studs and double 2 x 4 wales secured with Richmond snap ties. Above the first floor where the more uniform size of columns is held, column clamps are employed on the form work.

Cages of reinforcing steel are assembled on the job site on special stands that support the heavy weight. The stands consist of a round concrete slab for the base cast around a pipe for the upright. These stands are laid out in rows, with their tops tied together by bars from which the cages are hung. The assembled heavy steel cages, weighing as much as 3 or 4 tons, are lifted from the horses and placed in the forms by cranes, for the basement columns, and by a special winch device on wheels, above the first floor. Form lumber is cut right on the job with two CMC 12-inch table saws driven by gas engines. With the garage roof finished, the long flat slab serves as a shop area for both the carpenters and metal lathers who assemble the reinforcing cages.

The lack of working space on the big project is a continual problem, with tons of building material and large working crews being compressed into a single city block.

### Steel Shores Used

Thicknesses of the reinforced-concrete beam and floor slab construction vary somewhat. The garage roof has a 12-inch slab; the second floor slab is 6½ inches thick; while above that the other floor slabs and roof are either 4½ or 5 inches. Beam depths vary according to the loads, but their location is such that all the main apartment rooms have flat ceilings without beam breaks. Slab forms are built of the ⅝-inch plywood panels supported on 3 x 4 stringers spaced on 8 to 10-inch centers and shored up from the floor below. On this job Acrow adjustable steel shores are used over and over again to support the slab and beam forms being poured, and later for re-

(*Continued on next page*)

*All C. & E. M. Photos*

Concrete is supplied in this Jaeger 7¼-cubic-yard truck-mixer on a Mack truck, shown here discharging into an Insley 1-yard bucket on a Manitowoc Speedcrane.

On lower pours—here, for example, the 12-inch garage roof slab—the Speedcrane lifts the bucket to the forms. Higher up, steel towers handle the concrete.

After this first-floor slab concrete is discharged and vibrated, it will be finished by a Whiteman concrete finishing machine and cured with Ritecure compound.

shoring after the forms are removed and until the concrete has attained the strength required.

Under the slabs the shores are set on 4-foot centers both ways, and on 2-foot centers beneath the beams. Two types of Acrow shores are in service—the standard, with a 6-inch square plate on top for use on the slabs; and the beam shore with a 14 x 1-inch top plate for use under the beams. Both types have 6-inch square base plates. No wedging or mud sills are necessary and, except with the longer shores, cross-bracing is not required between the shores. One man quickly adjusts the shores to the height required which varies from an 8-foot clear-height ceiling in the apartment rooms to as much as 14 feet 8½ inches in the garage in the basement.

Column forms and beam sides are stripped 24 hours after a pour, while slab forms are left in place for 48 hours—longer in cold weather. After the latter are removed, the shores are replaced under the concrete and kept there for 10 days.

### 4,000-Pound Concrete Design

The 19-story building is the first in New York City to employ 4,000-psi design-strength concrete; a recent revision of the building code permitted the use of the higher-strength mix. The 4,000-pound concrete is used in columns from the first to the twelfth floor, and permits a reduction in size in favor of additional floor space. Above the twelfth floor, 3,500-pound concrete is used in the columns, the same as is used in the columns from the footings up to the first-floor level. All slabs contain 3,000-pound concrete. Both Lehigh high-early-strength cement and Lehigh portland cement are used in the mix; there are no admixtures. The aggregates are sand and gravel, with a 1-inch maximum size on the coarse aggregate.

Concrete is supplied by the Colonial Sand & Stone Co., Inc., of New York City in truck-mixers, the actual mixing being done after the trucks reach the site. The batch plant is close by at the East River and E. 62nd Street, and a fleet of 7½-cubic-yard truck-mixers deliver enough concrete to maintain a pouring schedule of 60 yards an hour.

On the lower pours the truck-mixers discharged into an Insley 1-yard concrete bucket which was lifted to the forms by a Manitowoc Speedcrane with a 65-foot boom. A Bay City truck crane with a 65-foot boom was also on the job, being used mostly for handling steel, forms, and other materials. As the concrete is placed it is vibrated with Mall and Vibro-Plus vibrators. The floor slabs are finished with a Whiteman concrete-finishing machine. Curing is done with Ritecure spray compound.

Four Chesebro-Whitman tubular steel towers were set up to handle the concrete, a tower in each of the four indented bays. They are to be erected in 3 lifts, 6 stories at a time, to an ultimate height of 270 feet. The building is 178 feet high from the sidewalk to the roof. Within each tower is a 36-cubic-foot concrete bucket which is raised to a 1¾-yard floor hopper located at the slab level being poured. A United 2-drum hoist powered by a Chrysler gas engine drives the tower lift. At the top of each tower is a 40-foot Chicago boom with a 2-ton lift on a 30-foot radius by which the reinforcing steel is raised to the different floor levels.

From the floor hopper the concrete is distributed to the forms by Jackson buggies which are pushed by hand over runways laid out for that purpose. The big building is constructed a floor at a time, column by column, and slab by slab. The columns are extended by lapping the reinforcing steel, erecting a new cage, setting the forms, and filling them with concrete.

### Brick Walls

The laying up of the outside walls will be started before the concrete has been finished. The brick laying has been sublet to John B. Kelly, Inc., of New York City. Walls will be 10 inches thick, the brick being waterproofed and backed with cinder blocks. Entwisle ceramic glazed brick, oyster-white in color, will be used. This light, self-washing, glazed brick finish will reflect the maximum amount of sunlight for the benefit of the surrounding area that is chiefly old-type tenements. The entire interior is plastered. In most of the apartments the windows extend the full width of the rooms. They are flush with the outside walls to eliminate stains caused by drippings from dirty window sills. Above the sixth floor there are balconies on practically all the apartments, and above the twelfth floor many of the apartments contain wood-burning fireplaces.

Otis elevators will be installed—10 passenger, 5 service, and 1 freight elevator. The lobby on the first floor will be enclosed by sliding glass panels so that a view may be had through the building from the gardens on either side. In warm weather these panels may be opened.

The basement, besides containing the garage, has tenant storage space, service rooms, and a public laundry. On the first floor are a restaurant, bar, pram rooms, doctors' offices, and stores opening on Second and Third Avenues. On the E. 65th Street side are 2 off-street delivery areas with large basement receiving rooms. The two driveways on the E. 66th Street side are covered

(*Concluded on next page*)

*C. & E. M. Photo*

**The carpenter shop for the apartment building job is set up on the roof of the underground garage. In the background is New York City's Third Avenue "El".**

PUT YOUR MONEY INTO A TRUCK THAT REGULARLY DELIVERS THE GOODS!

Record breaking performance under the toughest of schedules and operating conditions . . . low cost-per-mile of operation . . . minimum time out for maintenance . . . these are not idle claims . . . they are what you get when you buy powerful Federal Trucks. And they all add up to bigger and more profitable payloads.

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## Concrete Framework For Apartment House

*(Continued from preceding page)*

at the two entrances into the building.

**Personnel**

Nearly 1,000 men will be employed in the construction when it reaches its peak and the bulk of the subcontractors are at work. The Corbetta Construction Co. alone uses from 300 to 500 on the concrete operation.

For the general contractor, Cauldwell-Wingate Co., Inc., Albert Greig is Superintendent, while James B. Lyttle is Superintendent for the Corbetta Construction Co. The life-insurance company is represented on the project by Edward W. Stearns, Construction Engineer.

The building was designed by Mayer & Whittlesey-Skidmore, Owings & Merrill, Associated Architects of New York City. Charles Mayer is Structural Engineer, and Jaros, Baum & Bolles are the Consulting Engineers on the mechanical work.

## Small-Pipe Threader

A new triple-purpose portable machine for cutting, reaming, and threading pipes to 2 inches in diameter and threading solid rounds to 1½ inches in diameter is announced by the Peerless Machine Co., Racine at 16 St., Racine, Wis. A new type of Roto-Lok wrenchless chuck, which in effect is a rapid-acting rotary vise, makes it possible to chuck and unchuck work as the spindle rotates.

The portable pipe-threading machine can be used in the shop, or on the job, for new work as well as maintenance. A manually operated hand lever is conveniently located on the machine base, and its movement feeds the carriage assembly forward on replaceable steel ways.

Because a special high-speed universal geared-type motor is used, cutting speed for this machine is automatically kept constant for pipe of any diameter. This motor is designed with a power curve that adjusts itself in speed to the size of pipe and type of thread being cut. Machines may be furnished with stationary welded steel stands; or, if work requires portability, a stand with heavy-duty wheels and retractable handles is recommended by the manufacturer.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 149.

## Turbine-Pump Motor

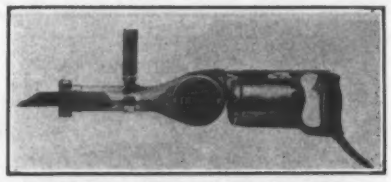
A new type of CSP Life-Line motor especially designed for deep well turbine pumps is announced by Westinghouse Electric Corp., Box 868, Pittsburgh 30, Pa. It is of the squirrel-cage induction type; is said to be weatherproof; has a vertical hollow shaft; and can be furnished as a complete motor, a motor without base, or as a stator and rotor only. These motors are available with 1 to 20 hp; 60, 50, or 25 cycles; and 208, 220, 440, or 55 volts.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 84.

## Reciprocal Gun Saw

A newly developed reciprocal gun type of saw has recently been introduced by Transa, Inc., Gateway Bldg., Room 445, Minneapolis 1, Minn. It is said to cut through any material from rubber to stainless steel, and is useful in a wide variety of operations.

The stroke is adjustable up to a full 2 inches. Special guides for various blade widths, from ½ to 1 inch, eliminate whipping or snapping of the blades; these guides are also used as "gun" sights in following a line. The



**The Transa reciprocal gun type of saw is designed to cut through any material from rubber to stainless steel. It can be driven by an electric drill, by an air drill, or by a flexible shaft.**

handle of the tool can be moved in any position to ease arm fatigue of the user when cutting at various angles. The unit will swivel 360 degrees and lock in any cutting tangent. Concentration of power on the cutting stroke is made possible by special gear arrangements. The Transa saw can be driven by an electric drill, an air drill, or a flexible shaft.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 141.

## Wall-Form Construction

A new catalog describing the Symons system of wall-form construction has recently been prepared by the Symons Clamp & Mfg. Co., 4249 Diversey Ave., Chicago 39, Ill. The 32-page folder explains that this system utilizes the usual panel construction but the tie rods are anchored from the sides of the panels; they do not pass through. This, the company says, saves time spent fishing for tie openings in the opposite panel. Also, when the panels are broken loose from the concrete, they may be lifted straight up; they do not have to be pushed away and disengaged from the ties.

Catalog No. F-5 presents and illustrates all standard forms and ties made by the company. The forming system may be rented with a purchase option.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 155.

## To Manage Shovel Sales

The Schield-Bantam Co., Waverly, Iowa, has appointed G. O. Britton Sales Manager. Before accepting this position Mr. Britton was Sales Manager for the Athey Products Corp.


# "Caterpillar" announces a NEW earthmoving power package

Working on 500-foot one-way hauls, this "Caterpillar" No. 40 Scraper loads an average of 46 yards per hour—360 cubic pay yards per 8-hour day. Proper blade angle and 43 drawbar hp. pile in heaping loads in less than a minute.

## Glass Safety Helmet

A new crown for the Hard-Boiled hat has been developed by the E. D. Bullard Co., 275 Eighth St., San Francisco 3, Calif. It is made of resin-impregnated Fiberglas, a strong and resilient material, and is said to be impervious to moisture and acids, and to pass all dielectric tests.

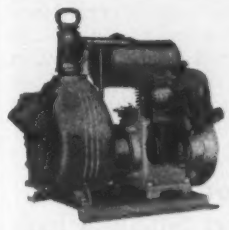
The hat is produced in a variety of colors. White and grey are standard; other colors are available in quantity orders. Colors are permanent; the pigment is impregnated all the way through the material, the manufacturer states. Colors may be used for identification of crews on large-scale operations, and there is a specially pigmented hat that glows in the dark for tunnel workers, night construction crews, and others. The hat's resistance to radiant heat is designed to lower the incidence of sun and heat stroke among workers.

Further information on this helmet may be secured from the company. Or use the Request Card at page 16. Circle No. 68.

## Self-Priming Pump

A new high-head self-priming 2-inch pump, Model 10H, has recently been developed by the Sterling Machinery Corp., 405 Southwest Blvd., Kansas City 8, Mo. Of aluminum construction, this lightweight pump is designed to meet a variety of needs.

The pump is powered by a Wisconsin AKN 6-hp engine with a 17.8-cubic-inch displacement. It will operate under total heads of 25 to 140 feet, the manufacturer states. Capacities run as high as 160 gpm. Three types of mountings are available: a truck with two steel wheels, a truck with two pneumatic-tired wheels, and a flat steel base.



The Sterling Model 10H self-priming pump will operate under total heads of 25 to 140 feet. Capacities run as high as 160 gpm.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 140.

## A Britisher Views U. S. Construction

Speed of construction, mechanization, and labor-saving equipment; efficiency in coordinating the work at the job site; labor productivity; and central heating and frame siding for small homes—these attributes of the American building industry impressed the 17-man British building team which recently concluded a six-weeks study of U. S. methods of construction.

Though no complete or detailed report has been made at this time, Robert Owen Lloyd, leader of the British team, in a statement to the Building Trades Employers' Association of New York City, commented generally on what had most interested them during their tour of the United States.

They expressed surprise at the speed with which the building industry was erecting homes; and they were interested in certain aspects of home design and construction. Framed walls and basement construction are almost unknown in Britain. "We are convinced", Mr. Lloyd said, "that the framing of walls adds to rapid construction and offers easy fixing for interior finishes, and at the same time allows fixing for any type of insulation." In England the vast majority of homes are constructed of brick. He explained that the framing of walls is impossible in Britain today because of the extreme shortage of dollars which would be required to purchase lumber in the United States and Canada.

"Another improvement is the provision for basements which make possible economical forms of mechanical services, the like of which we do not have in the United Kingdom", he said. The basement heating unit is, they feel, an improvement over their open fireplaces which waste heat and create additional housework. The expense of equipment is the primary factor prohibiting them from selling homes as fully equipped as ours.

Mr. Lloyd said that most roofs in England are made of slate or tile and that he was impressed with the long life and ease of application of asphalt shingles as used here in the U. S. "On major building construction", the team leader continued, "we were intrigued with the methods of building outside walls with a brick veneer and a cinder-block interior".

Praising the American system of free enterprise, Mr. Lloyd said: "One of the most important aspects of our tour has been to find out the reasons for the relatively high degree of productivity which exists here, not only among the labor force but among architects, contractors, and subcontractors alike. We have come to the conclusion that this is based on the high degree of incentive which exists here in every walk of life. There is keen competition among contractors for work, keen competition in the buying of materials, and keen competition among the labor force to retain their jobs in order that they may keep up their standard of living".

## Catalog Data on Hose

Cut-away illustrations and text in a new catalog section describe the sand and cement hose manufactured by The B. F. Goodrich Co., Akron, Ohio. Three types of hose are included: sand discharge and placement hose, cement-handling hose, and grout hose. Specifications and data are given in tables for each type.

A new catalog section on the company's line of welding hose is also available. It illustrates and describes the Goodrich oxyacetylene and Duo-Weld hose, and describes their construction.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 130 for the catalog on sand and cement hose and No. 131 for the one on welding hose.


YOU may have thought of the "Caterpillar" Diesel D4 Tractor as a "small" unit. But there's nothing small about its production when teamed up with the "Caterpillar" No. 4A Bulldozer and the new No. 40 Scraper. Here's perfectly matched equipment that fits into any number of construction and maintenance programs. Some of its advantages are:

1 Low first cost and low operating cost, coupled with high production capacity.
2 An all-"Caterpillar" team, with units designed for each other. One dealer's service keeps all equipment in top working condition.
3 All-hydraulic controls. A handy changeover valve next to operator permits fast switching from 'dozer to scraper. One man can easily disconnect scraper from tractor.
4 The 'dozer blade can be angled or tilted to suit all needs.
5 Scraper blade designed for grader-smooth spreading close to vertical banks or structures.
6 'Dozer-type ejection on the scraper pushes load forward and under the blade, spreading smoothly.
7 Rear tires mounted inside the cut allow loading or spreading close to vertical banks or structures.

*Write today* for full information on this money-saving, money-making earthmoving "package."

Ideal for the tough jobs, this "Caterpillar" package is small enough to get in and out of tight spots, yet a heaped scraper rating of 4½ cubic yards is an assurance of high production.

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

Specifications

"CATERPILLAR" DIESEL D4 TRACTOR

| Drawbar Hp. | Belt Hp. | Weight* | No. Forward Speeds | Drawbar Pull** in Low Gear |
|---|---|---|---|---|
| 43 | 48 | 10,060 lbs. | 5 | 9450 lbs. |

*Standard 40" gauge. **At rated engine speed.

"CATERPILLAR" NO. 40 SCRAPER

| Capacity, Cu. Yds. | Weight | Tires | Blade Width | Overall Length | Width |
|---|---|---|---|---|---|
| 3.6 struck | 7380 lbs. | 4-11.00 x 20 12 ply | 6' | 21' | 7' 5½" |

"CATERPILLAR" NO. 4A BULLDOZER

| Blade Length | Blade Height | Max. Lift† Above Ground | Max. Drop Below Ground | Max. Blade Tilt | Blade Angle |
|---|---|---|---|---|---|
| 7' 9" | 27½" | 37" | 13¾" | 6" | 25° |

†With blade angled 25°

Price of a standard D4 Tractor is $4423; No. 4A Bulldozer is $1380; No. 40 Scraper is $2973; No. 44 Hydraulic Control for use with No. 40 Scraper and No. 4A Bulldozer is $523, f.o.b. Peoria, Illinois, subject to change without notice.

CATERPILLAR DIESEL
REG. U. S. PAT. OFF.
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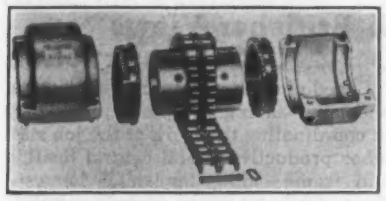

This view shows a Type A Diamond chain flexible shaft coupling with pliable seal rings that fit on the hubs to confine lubrication.

## Revolving Casings, Flexible Couplings

New lightweight revolving casings for Diamond flexible couplings have been developed by the Diamond Chain Co., 402 Kentucky Ave., Indianapolis 7, Ind. Made of aluminum alloy, they are split axially to permit installation or removal in a space equal to the coupling length. This feature permits easy inspection of the coupling at any time.

Two types are made. Type A, shown in the accompanying exploded illustration, has pliable seals which fit over the sprocket hubs at either end to enclose the lubrication. They are made to engage with the 2-strand Diamond roller chain and are locked in place by the casing. The Type C casing design employs a lubrication seal on one end only. The other end is sealed by the clamp fit of the casing halves on the finish ground hub of one of the coupling sprockets.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 4.

### Concrete Hauling

An 8-page folder on concrete-hauling operations is now available from the Dumpcrete Division of Maxon Construction Co., 131 N. Ludlow St., Dayton 2, Ohio. The bulletin shows on-the-job photographs and describes concrete work done in each of the following fields where scattered pours of concrete are required: housing, paving, industrial buildings, tunnels, bridges, canals, and sewage-treatment plants. In each case, Dumpcrete non-agitating hauling units were used to transport the centrally mixed concrete from a pre-mixing plant to the job. A brief description of the job and plant are also included.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 23.

### New Leschen President

Arthur A. Leschen has been elected President of A. Leschen & Sons Rope Co. to succeed the late William C. Henning who was President from 1943 until his recent death. Douglas W. Vernon has been elected Vice President and General Manager.

Mr. Leschen was first employed by the St. Louis, Mo., company in 1902 after his graduation from Washington University. He is the grandson of Adolph Leschen, the company's founder. Mr. Vernon, the new General Manager, joined the Leschen Co. in 1945. In 1947 he was elected Vice President in charge of Sales. As General Manager he will continue to direct the activities of the Sales Department.

## Rubber-Tired Crane Used as a Snow Plow

The Lorain rubber-tired Moto-Crane need not be put aside after the regular construction season ends. This crane, manufactured by The Thew Shovel Co., 28th St. and Fulton Road, Lorain, Ohio, can be converted into a snow plow for winter use. The company states that the Moto-Crane's 6-wheel drive gives it the traction necessary to handle most snow-removal jobs, and that a wide variety of plows may be attached to the front end of the crane as easily as on any truck.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 126.

A variety of snow plows can be attached to the Lorain rubber-tired Moto-Crane to give it year-around usefulness.

**TUBE BORIUM and BOROD give you the edge**

Pole settings and footings go down regardless of winter freezes with these auger cutters, tipped with Borod and Tube Borium. So enduring is the abrasion resistance of these Stoody hard metals that one operator reports drilling thirty-three 16" footing holes to a depth of 6 feet through flint-hard frozen gumbo soil in just 2½ hours! Another drilled for and set over 100 poles in one hot day!

Tube Borium and Borod insure 12 month a year operation on the auger illustrated. No shut downs for winter freezes, no lost time for frequent cutter changes! Quick penetration through dry hard packs, shale, clay, gumbo, tree roots, even gravel.

If extreme earth abrasion and maintenance of sharp cutting edges is your wear problem, ask for BOROD or TUBE BORIUM*. Your Stoody dealer will gladly recommend correct application methods or write direct.

**STOODY COMPANY**

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*Borod and Tube Borium consist of pure tungsten carbide particles in mild steel tubes. They differ primarily in size of particles, Borod being much finer and smoother in finished deposit. Both rods are typified by unusual resistance to straight abrasion.

WON'T QUIT
or cause time out

A Hayward Bucket keeps the job going ahead on scheduled time. It won't quit or cause time out.

The Hayward Company
32-36 Dey Street
New York, N.Y.

Hayward Buckets

# Road-Mix Experts Lay 5 Miles in 4 Days

## Secondary Road Through Mountains Built Rapidly As Paving Crew Finishes Year-Long Contract

✦ IN the stillness of Nevada's back country, where endless winds sigh through scrub cedars, a crew of paving experts recently finished, in near-record time, a new secondary section on the state highway system. In only 4 days, Isbell Construction Co. of Reno, Nev., completed 5 miles of mixed-in-place bituminous construction 24 feet wide and 2 inches thick.

The work, all on a new location, was done about 25 miles southwest of Hawthorne, Nev. It marks the first major improvement, within the state, of the secondary route which connects Hawthorne with Mono Lake and Leevining, across the state line in California.

Despite the speed shown by the bituminous crew, other phases of the project took many months to complete. The Nevada Department of Highways contract called for 79,000 cubic yards of Class A common excavation, 38,000 cubic yards of Class B roadway excavation in rock, 23,000 tons of select material for sub-base and surfacing, 4 reinforced-concrete box culverts from 42 to 100 feet long, 32 Armco corrugated-metal pipe culverts 24 inches in diameter, and a few other minor items, such as marking posts and so on. The original contract represented a low bid of $211,000, but a supplemental agreement made after work had begun reduced the cost to $181,000. The $30,000 reduction was made possible by the elimination of watering items in the contract, since there was no moisture to be found anywhere near the work.

During the 1948 work season, from July 27 to December 6, operations consisted of grading, construction of drainage features, and the production and laying of select decomposed granite for the sub-base and surfacing. All of the mineral aggregate was laid down last year, including the material to make 2 inches of road-mix this season. It was left open through the winter. When work resumed on July 6, 1949, it did so in a burst of speed which saw the project paved and ready for final acceptance by July 20, only two weeks later. In that short time the road was dressed, the mixed-in-place material combined with its bitumen content and laid, a bituminous seal was installed, and the project was cleaned up for the final inspection.

### Fast Road-Mixing

The short time interval required for surfacing the new highway was truly one of the major accomplishments of a job which was noted for problems along other lines. The general excellence of grading and sub-base work performed last year contributed in large measure to the road-mixing record which was

(*Continued on next page*)

A Ford-towed Rosco 2,700-gallon pressure distributor applies MC-2 asphalt as a seal coat on the Hawthorne, Nev., job. In the background is a High Sierra range of California.


# One Texas City* Cut Hot Asphalt Handling Costs Over 50%

Here's How

*Name supplied on request.

**GRACE RAPID FIRE HEATER**

**heating tank car and loading hot asphalt into Grace 600 gal. kettle. (10,000 gal. storage tank not shown).**

*For further information use the handy coupon below*

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**MANUFACTURING COMPANY**
6015 Lamar St. Dallas, Texas

**OLD METHOD**

Asphalt in barrels cost per gallon ---------- $.165
A six man crew emptied an average of 400 gals. per day into a 600 gal. kettle, heated, and applied it. Cost per gal. ---------- .192
Total per gal. ---------- $.357

**WITH GRACE RAPID FIRE HEATER AND 10,000 GALLON STORAGE**

Cost per gal. in tank cars ---- $.082
A six man crew has 600 gal. kettle loaded at 8 a.m. with *Hot* asphalt and averaged applying 1,000 gals. per day—Cost ---------- .077
Heating cost per gal. on Rapid Fire Heater, operating 9 hours per day (no allowance for depreciation), 3 kettles operating ---------- .006
Total per gal. ---------- $.165

Please send me information on the equipment check marked ✓

- ☐ Rapid Fire Heater
- ☐ Spreader Box
- ☐ Asphalt Maintenance Kettle
- ☐ Sweepers

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Company_____
Address_____
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Dept. 25, 726 South Flower Street, Burbank, California.

Please write for illustrative catalog on complete line of Viber equipment.

## Road-Mix Experts Lay 5 Miles in 4 Days

(*Continued from preceding page*)

achieved this past summer.

When work resumed in the summer, the first few days were devoted to motor-grader blading by a Caterpillar No. 12 machine. The existing grade was re-dressed to the neat lines established by surveyors, the ditches were bladed, and any dressing which could be accomplished by a motor grader was done. A 3-inch crown was re-shaped in the center of the highway.

Sections approximately one mile long were tentatively planned for mixed-in-place work. The material for mineral filler was then bladed off the top of the sub-base. A loose windrow of this decomposed granite was laid down in the quarter section on the south side of the highway. The road-mix material was governed by the same fineness specifications which applied to all the sub-base, and which called for the following gradation:

| Sieve Size | Per Cent Passing |
|---|---|
| 1-inch | 100 |
| No. 4 | 55-100 |
| No. 10 | 35-65 |
| No. 40 | 15-40 |
| No. 200 | 3-16 |

No bituminous prime coat was required on top of the sub-base, and so after only a day or two of exposure to the hot wind and sun, the windrow was ready to be road-mixed.

Arrangements had previously been made to ship SC-3 asphalt in by rail to a siding at Hawthorne, Nev. From this point on, it was handled by transport trucks. They had a 22-mile dead haul to the east end of the project. The hauling fleet consisted of a Peterbilt truck with a 5,500-gallon tank trailer, a Kenworth with a 5,500-gallon tank, an F8 Ford with a 3,500-gallon tank, and another Ford with a 2,700-gallon tank trailer. An oil-fired retort at the Hawthorne railroad siding enabled the asphalt to be transferred to the project at its application temperature of 200 to 240 degrees F. The long round trip required about 4 hours. Three trips per day was maximum delivery production most of the time.

### Gardner Mixer Blends Material

The SC-3 asphalt was blended with the 7½-foot-wide x 1½-foot-high windrow by a Gardner mixer, at an average ratio of 5.4 per cent. The bitumen ratio, expressed in other terms, was 1.58 gallons per square yard of 2-inch mat.

The first pass by the Gardner machine was made with the windrow in its original quarter point on the south side of the highway. The first pass put all of the asphalt in the decomposed-granite filler. As the Gardner machine made this first pass, it left behind a somewhat wider windrow of material than it had originally picked up. This windrow was immediately re-shaped, or healed, behind the Gardner mixer, by the Caterpillar No. 12 motor grader. As the motor grader followed the mixer, it too performed some mixing in the healing operation.

The second pass by the Gardner was also made with the windrow in its original quarter point. This pass achieved a more uniform blending of the mineral and bitumen. Further mixing was done just behind the Gardner by the No. 12 motor grader, which on this pass rolled the entire windrow over to the center of the highway.

A third pass by the Gardner machine completed its part of the road-mixing, and it was then ready to move to the next mile.

When the mixed section had aerated for about 48 hours, the Caterpillar No. 12 grader moved back in to start the laydown. The windrow was stirred and livened by a pass or two, in order to eliminate any light-colored places not yet covered by bitumen. These spots, fortunately, were rare. The windrow was then sized 12 feet wide by the grader blade, leaving the 12-foot ribbon of material equally spaced over the highway center line.

*C. & E. M. Photo*

**On the Isbell job in Nevada, Warren Johnson levels and tamps a culvert marker down in the hole, as Harvey Korhonen measures the correct distance from a survey stake.**

Special shop-built steel wings were then installed at the edges of the motor-grader blade. Bolted to the motor-grader moldboard, the steel wings were designed to catch and maintain a blade-ful of material at each edge. This is a vital necessity in maintaining a straight line at the shoulder. With the wings installed, the material was swept out to the shoulder line. The edge of the pavement was placed against a 4-inch-deep V-ditch, previously cut in the sub-base by the grader blade. That will prevent traffic from breaking the pavement edge in years to come.

The shoulder pass on the opposite side was made next. With that done, bituminous material had been spread out to the neat pavement edges along both shoulder lines, leaving only a

(*Continued on next page*)

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with the TEXACO air compressor oils made to

No guesswork when you lubricate with Texaco air compressor oils. There is a complete line of them so that, *regardless of your operating conditions,* you can be sure of clean valves, free rings, open ports and clear air lines. Here's the set-up —

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crowned bulge along the highway center line. This center material was then finished and dressed, again shaping the crown in the center of the road.

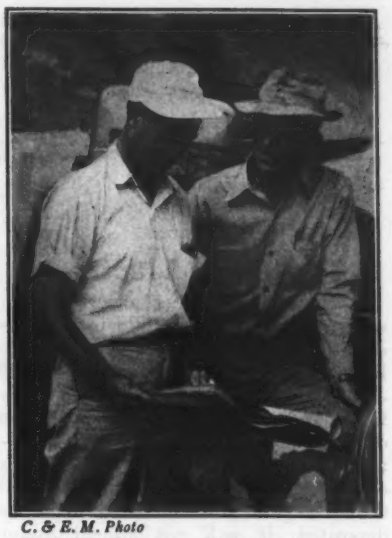
The smooth, polished, finished section was then exposed to the weight of a 10-ton Buffalo-Springfield tandem steel-wheel roller, which compacted it thoroughly.

Practical observation over a period of many years has indicated to road-mix men one major rule which, if applied to decomposed-granite mineral, will result in a velvet-smooth laydown. That empirical law says "slow the laydown grader to second gear with reduced throttle, and there will be no machine chatter to make the finished highway rough".

The rule was strictly observed on this project. Decomposed granite in a mixed-in-place windrow, as usual, came out fluffy and easy to work. The material was treacherous to handle, however. By laying the material down with the grader in second gear, and with its throttle reduced about one third, there were none of the tiny waves left in the pavement surface which machine chatter normally causes. The finished material, after being rolled, rode velvet-smooth at 70 miles an hour.

After the entire 5 miles was mixed and laid, a seal of MC-2 asphalt at the rate of 0.1 gallon per square yard was applied at a temperature of 215 degrees. A new Rosco RQE-T distributor, of 2,700-gallon capacity, was used with No. 2 spray tips for the work. It was supplied with asphalt, after its initial loaded trip from Hawthorne, by one of the 5,500-gallon units used earlier.

The seal was applied downhill from the 7,600-foot summit at the west end. The road-mixed pavement, exposed to the hot summer sun, was thoroughly warm when the MC-2 was shot. The sealing oil not only waterproofed the surface, but it penetrated through the mix to make a dense, waterproof mass. That alone, engineers believe, will resist any infiltration of winter snow moisture. No armor coat or chips were required by the specifications.



*C. & E. M. Photo*
**Resident Engineer Jack Parvin (left) and Paving Foreman Floyd Lambert discuss payment of the final estimate on the Nevada secondary-road project, as they check job plans.**

### A Rocky Grading Assignment

The grading work, performed by Isbell's men and equipment last year, was one of the tough jobs of their season. With 38,000 cubic yards of granite, talc, cemented conglomerate, and a few other assorted tough materials, at least a third of the yardage required drilling and blasting. This in itself was difficult, but it was complicated still further by the fact that the entire job lay on a new location calling for extensive pioneer work in steep canyons and precipitous mountainsides.

The grading fleet consisted of four Caterpillar D8's with LeTourneau 12 and 15-cubic-yard Carryalls. There was a Northwest 80-D power shovel with 7 Mack dump trucks, three of which were 15-cubic-yard machines and the remainder of 12-yard capacity. The shovel and trucks were assigned to the removal of blasted and broken stone. Other grading equipment included two No. 12 Caterpillar motor graders for blading and leveling, and a D4-mounted Traxcavator loader for miscellaneous work.

Two Cleveland wagon drills, powered by a Joy compressor of the 450-cfm class, were used to drill most of the holes. Four small pneumatic hand-held hammers did some minor work on secondary drilling, but for the most part the larger machines, with 20-foot Timken steel and Timken 2½-inch detachable rock bits, sank the 20-foot powder holes.

Powder holes were put down on 12-foot-average staggered centers. Drill bits usually lasted 20 feet, or one maximum-depth hole. Then they lost their cutting edge and gage, and had to be re-sharpened. Since some of the cuts were as much as 40 feet deep, two 20-foot blocks of rock had to be blown out.

Each drill hole was sprung with stick powder of 60 per cent strength, and the holes were then loaded with Hercomite bag powder. The holes were wired in series, which, according to the powder man, made it possible to pull from 100 to 150 holes at one time with a 50-hole hand blasting machine. No. 6 electric blasting caps were used to set off the charges, and no delays were employed.

Blasted rock, loaded by the Northwest 80-D shovel, was used for fills. It, as well as material handled by the tractor equipment, was placed without the addition of moisture, because nowhere in all that vast adjacent high desert was there an available source of water. Undoubtedly the embankment received some compaction from the equipment, and it settled some during the winter under the action of light traffic and snow moisture.

A few watercourse channel changes, somewhat elaborate for a secondary highway, were made. These channel changes also called for rock excavation. In several of these places, however, the shovel could load out the broken material from a channel change and dump it direct, by casting, into the adjacent roadway embankment.

### Select Material From Pit

The select decomposed-granite deposit which furnished the sub-base and road-mix material was located about a mile from the west end of the project, near the summit of a pass 7,600 feet above sea level. It lay in place so naturally well graded that no screening to meet the specifications was necessary at the pit. A small labor crew at the Gardner mixer was able to hand-pick and throw out the few oversize particles in the windrows.

The same Northwest 80-D power shovel which had worked on the rock was used in the decomposed-granite pit. It loaded 10 to 12 dump trucks, which hauled the material out to the road. There it was "tail-gated", and spread by a motor grader. Six inches

*(Concluded on next page)*

*Photo courtesy Joy Mfg. Co., Sullivan Division*

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**Lubricants and Fuels**

FOR ALL CONTRACTORS' EQUIPMENT

## Road-Mix Experts Lay 5 Miles in 4 Days

(*Continued from preceding page*)

of sub-base was required near the summit of the pass, while 4 inches sufficed down through the rocky canyon.

The material was laid down without water, finished to grade, rolled by a steel-wheel Buffalo-Springfield machine, and left through the winter for the fast paving crew whose work this year was previously detailed.

### Some Finishing Short Cuts

Final dressing, preparatory to that July day when the State of Nevada "bought" Project No. FAS 664 (1), saw some short cuts used which helped to finish the work at a profit in the 2-week working period of 1949.

Shoulders outside the pavement line varied from nothing to about 3 feet, depending on terrain. The steep banks in fill sections presented somewhat of a dressing problem, because state engineers insisted that the project embankments and cuts be left neat and well dressed. Unfortunately, the motor-grader blade which had done such excellent work on the cut slopes could hardly get down to these restricted locations.

The problem was solved quite neatly by dragging these places with heavy log chain. A timber outrigger was fastened to the front bumper of a pick-up truck. The heavy chain was laid out in a long loop, fastening the rear end to a shorter outrigger slung from the rear of the pick-up. The scheme worked well. It was fast and did a good job. Loose stones dislodged by this device were loaded by a Scoopmobile and trucked to a dump ground away from the roadway.

Culvert marker boards, too, had to be set at each of the many drainage structures intersecting the new route. A special rig was made to do this work. It consisted of an old GI war-surplus flat-bed truck, on which was mounted at right angles to the truck axis a Buda-Hubron earth drill, powered by a Buda gasoline engine. The auger bit stuck out far enough over the edge of the truck bed that it could dig the holes quite easily, leaving the truck parked on the pavement. Then the marker boards were set in place, plumbed with a carpenter's level, and backfilled.

The entire batch of marker boards was installed by two men in two shifts.

Work during 1948 was done on a 9-hour day, 6-day per week basis. This year's paving was rushed through on a 10-hour day, 7-day per week schedule. "My wife says I'd better get back to Sparks," said Paving Foreman Floyd Lambert. "I've been out here 2 weeks in a row, and if I stay much longer she'll go to Reno."

Completion of the new 5-mile section makes a decided contrast to the highway on both sides through that area. The 46-mile road between Mono Lake and Hawthorne is, for the most part, a rough gravel and dirt route, which takes about 1½ to 2 hours to traverse. California did a 10-mile oiling job on her side of the line, and the new Nevada section will help to close the gap by taking care of the worst rocky terrain, near the summit of the pass, through which the road now runs. The remainder is unfortunately still rough and hard to maintain.

### Personnel

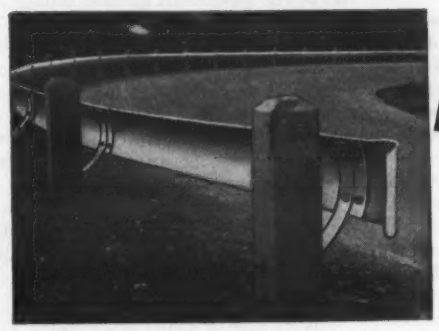
The Federal-Aid secondary project was designed and supervised under the general direction of W. T. Holcomb, State Highway Engineer, with J. D. Meacham as Construction Engineer and Jack Parvin as Resident Engineer.

W. J. Isbell, Vice President of Isbell Construction Co., had general supervision of his company's operations. He was assisted by Floyd Lambert on paving, and by Frank Quilice and Arnold Blair on the grading of 1948. Excellent organization, flexible enough to take every advantage of "breaks" in the weather, was one of the top secrets of the excellent construction record set on this secondary project far back off the more beaten paths which are marked by Nevada's higher-type transcontinental highways.

## Surfacing Electrode

A new hard-facing electrode for extreme abrasion and mild impact encountered in construction work is made by the Wall Colmonoy Corp., 19345 John R. St., Detroit 3, Mich. This hard-facing rod is for application on carbon or manganese-steel parts. It is available in 14-inch lengths with diameters of ⅛, 3/16, and ¼ inch. The Rockwell C hardness of this rod is 61 to 65, as deposited. It will not anneal under heat.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 70.

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## Simple Trick Saves Concrete Form Work

(*Continued from page 3*)

unit of construction on the Hollywood and Santa Ana Parkways. These freeways are on the state highway system and are an activity of the State Division of Highways. Charles H. Purcell is Director of Public Works, G. T. McCoy is State Highway Engineer, and F. W. Panhorst is Bridge Engineer, with offices in Sacramento. S. V. Cortelyou is Assistant State Highway Engineer, with offices in District VII headquarters in Los Angeles. Field operations are under the supervision of J. W. Green, Southern Representative of the Bridge Department. J. M. Curran is Resident Engineer.

Oberg Brothers is well known throughout southern California as bridge-building specialists. The firm is made up of Seth and Oscar Oberg, partners. Assisting Superintendent Oscar Kringlen out on the job were Nels Oberg, in charge of excavation, and Leonard Swanson, Office Manager.

As structures go, the Spring Street Overcrossing is one of the smaller bridges of the great new parkway system. But small bridges have their peculiar problems the same as the more dramatic large structures, as the builders demonstrated here by whipping their problems with speed and efficiency.

## Two Diesel Crawlers With Improved Power

New A models of the TD-18 and TD-14 diesel crawler tractors are announced by International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill. Both the TD-18A and TD-14A, now in production, have greater work capacities than the previous models, and incorporate new features designed to increase operator comfort and service life.

The heavy-duty TD-18A has 87 drawbar horsepower, compared to 80.5 in the previous model. Net engine horsepower at the flywheel, which was 97 in the last model, is now increased to 107. Belt horsepower, previously 91.5, has been raised to 101.

Drawbar pull is at a new high of 22,400 pounds in first gear with the engine operating at maximum torque. The drawbar has been strengthened by welding, in addition to riveting, the

One of two new A-Model diesel crawler tractors, this TD-18A has 87 drawbar horsepower, compared to 80.5 in the TD-18.

company says. For improved traction, wider 20-inch shoes are now standard. This model has six speeds forward, to a high of 5.7 mph, and two reverse, up to 3.5 mph.

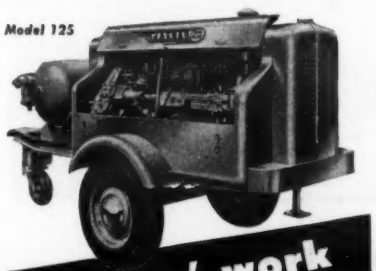
In the TD-14A, horsepower has been increased to 76 at the engine flywheel, 60.5 drawbar, and 72 belt. With the added power, this tractor has a maximum drawbar pull of 16,600 pounds in first gear. The TD-14A has the same speeds as the TD-18A.

Both tractors feature spring boosters on the steering-clutch hand levers for ease of operation; a closed cooling system to prevent loss of coolant when the tractor is working on a steep grade, and to help maintain proper engine temperature; and increased-efficiency lubricating-oil filters to extend the usual oil change period.

Other parts now standard in both new models include crown-shaved transmission and final-drive gears; spiral bevel gears; improved engine-clutch hand levers; bonded clutch facings; dowel bolts in sprocket gears; split-type steering-clutch couplings; and steering-clutch pilot bearings with staked nuts. Transmission gear shifts are equipped with a lock designed to prevent gear "pop-out" under heavy going. A glass water trap in the diesel fuel system permits the operator or mechanic to determine the service needed by a quick visual check.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 44.


Model 125



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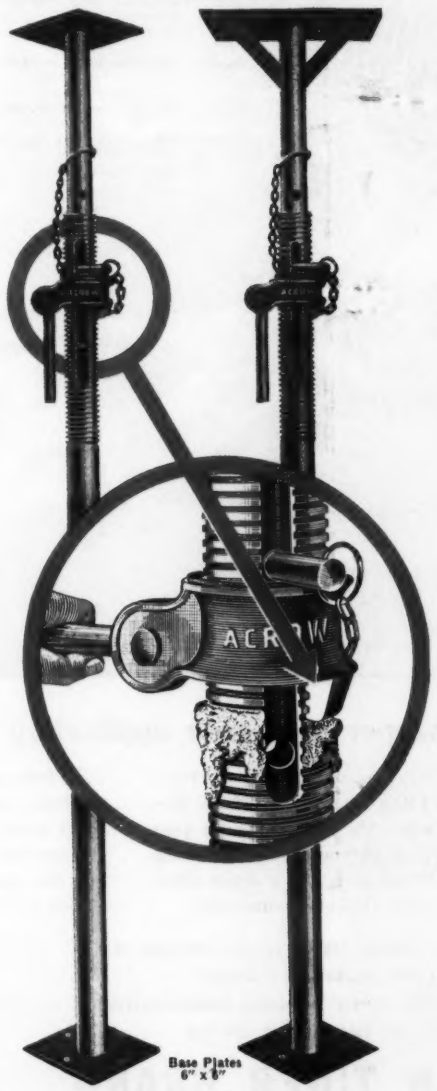

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**ALL-STEEL CONSTRUCTION**—eliminates injuries from wood slivers!!!

**CAPACITY LOAD TESTS**—Enable construction men to calculate accurately spacing and positioning!!!

FOR ECONOMY

**100% ACCURATE ADJUSTABILITY**—There are 4 *square* cut threads to the inch, therefore one complete turn raises the shore ¼ of an inch. Operator merely pegs shore at hole closest to desired height, then turns collar to gain fractional adjustment.

**ALL-STEEL CONSTRUCTION**—Means no repairs or parts replacement.

**SELF-CLEANING**—Self-cleaning feature guarantees minimum maintenance.

**ONE-MAN ERECTION**—because Acrow shores are so easy to handle that one man places them in position in a few seconds.

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Goulden Construction Co., San Diego, Calif.
Herlihy Mid-Continent Co., Chicago, Ill.
Knickerbocker Construction Co., New York, N.Y.
M&K Corp., San Francisco, Calif.
B. Perini & Sons, Framingham, Mass.
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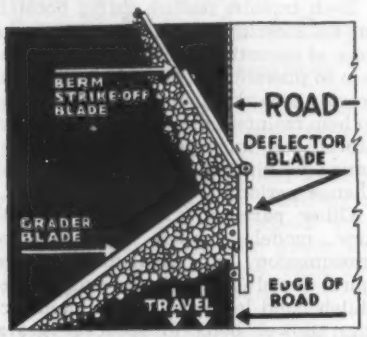


This diagram indicates the manner of operation of the new Galion berm shaper for work on ruts, washouts, etc., near the edge of road pavements.

## For Reshaping Berms

Ruts, washouts, gullies, and holes where berms and edge of pavement meet are a troublesome maintenance problem. The new Galion berm-shaper attachment has been designed to fill these worn and dangerous spots and reshape the berm flush with the surface of the pavement, in one operation. This shaper is manufactured by The Galion Iron Works & Mfg. Co., Galion, Ohio.

The attachment consists of a deflector plate, a distributing or strike-off blade, and connecting parts. It is attached to and works in conjunction with the motor-grader moldboard and circle. The deflector plate lines up squarely with the front and rear wheels of the grader, and rides on and parallel with the edge of the pavement. The grader blade reshapes the uneven berm. The excess material flows off the end of the grader blade against the deflector plate of the attachment, and passes on to the strike-off blade. The concentration of excess material in the corner of the deflector is said to assure a complete filling and reforming of the berm against the edge of the pavement. The angle of the strike-off blade, and the hinged section of the deflector plate to which it is attached, is adjustable to suit varying materials and operating conditions. This berm-shaper attachment is designed for use with the Galion No. 402 maintenance grader.

Further information may be secured from the company. Or use the Request Card at page 16. Cirele No. 18.

## Four Concrete Vibrators

An 8-page catalog describing four models of gasoline-powered concrete vibrators is offered by the Stow Mfg. Co., 40 Shear St., Binghamton, N. Y. The Model H, the catalog explains, is a 3-hp 4-cycle vibrator with an air-cooled motor producing 6,000 to 7,200 vpm. The Model HW is the same, except for the addition of a rubber-tired wheelbarrow mounting. The Model J6 and J4 are 1½-hp, 4-cycle vibrators driven by air-cooled motors. The J6 produces 6,200 to 9,000 vpm, while the J4 produces 4,000 vpm. All specifications, features, and standard equipment for each of the models are included in the catalog.

All models are portable, the H models being recommended for large reinforced-concrete buildings, thick floor slabs, walls, piles, foundations, and for highways, etc.; the J models are adapted to general construction work. The J4 model is especially designed for work in narrow forms, roadway joints, and shallow slabs. The catalog also explains the effects and the benefits of vibration on the strength and uniformity of concrete.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 30.

## Patent Scaffolding News

The Patent Scaffolding Co., Inc., of Long Island City, N. Y., has opened a new office and warehouse at 1516 Scovill Ave., Cleveland, Ohio. This new branch is housed in a modern one-story brick building which provides both covered and open storage for the company Gold Medal and Trouble Saver products that will be maintained there. M. O. Merts is in charge of this branch.

## AGC Revises Its Manual Of Accident Prevention

The third revised edition of "The Manual of Accident Prevention" has been published by The Associated General Contractors of America. Like its predecessors, it aims to show the safe way of performing construction work, whether in welding, pile driving, erecting steel, handling explosives, or whatever. And it emphasizes the costly results of incorrect, unsafe practices.

Text has been reduced as much as possible, and the number of photographs, drawings, and charts increased. New sections have been added on housekeeping, oxygen, acetylene and hydrogen, electric welding, power saws, explosive gases and liquids, motor graders, bulldozers, tractors, and boats and barges. Reference tables have been included.

The importance of the manual is clear when we read in its introduction that "construction accidents cost $787,500,000 in 1948". If only half of those accidents had been prevented by practical common-sense means such as those outlined in the manual, a saving of $393,750,000 would have resulted—not to mention the avoidance of suffering and the conserved man-power.

Groups which cooperated with the AGC in preparing the manual include the National Safety Council, the American Standards Association, safety engineers, insurance companies, and the Safety Division of the Corps of Engineers.

The manual costs $3 postpaid. To obtain a copy, write to the AGC, Munsey Bldg., Washington 4, D. C.

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# Bonny Dam Dirt Work Begins in Spite of Rain

## Unfavorable Weather Is Prevalent as Equipment Hurries to Begin Big Flood-Control Barrier

By RAYMOND P. DAY,
Western Editor

✦ JIM FOGG, Project Manager for Utah Construction Co., gazed ruefully through his office window at the slashing rain. Driven by a hard wind, the rain peppered the office building and made muddy pools out in the yard.

"Another day gone," he muttered to himself. "Maybe more, if the sun doesn't show up soon."

In a trailer camp at Hale, Colo., Andy Young listened to the drumming rain and thought of his idle HD-19 which at that moment sat in the Bonny Dam north borrow pit.

"Another day gone, Mary," he said to his wife. "Maybe more, if the sun doesn't show up soon. Maybe we ought to pull up stakes and get out of here."

"We can't, Andy. We're broke. We're in debt. Besides, where would we go? Frank's letter last week said they had a depression out in California," Mrs. Young said. Glancing at the worried face of her husband, she added comfortingly, "Let's stick it out, dear. This can't last."

Perhaps not. But the weather during the spring of 1949 was cussed out day after day by practically everybody on the Utah Construction Co. payroll at Bonny Dam. Weather more than anything else complicated the start of the big new $10,300,000 flood-control dam across the South Fork of the Republican River near the town of Hale, Colo.

The contractors got off to a good start only one day after the notice to proceed was issued by the Denver Office of the U. S. Bureau of Reclamation, last December 7. Spring rains did more to slow the work than winter snows did through the cold months. Despite this impediment, work is grinding ahead as fast as modern equipment can make it go.

### Contract Includes All of Dam

Designed principally for flood control, Bonny Dam is to be constructed completely under the Utah Construction Co. contract. It includes such items as the embankment, spillway, outlet works, protective rock facing, and other minor appurtenant works. Although 1,400 calendar days are allowed for the completion of work, Utah Construction Co. officials hope to finish up ahead of that time.

Bonny Dam is one of the 105 key structures of the Pick-Sloan Plan for the Missouri Basin. While the normal flow of the South Fork of the Republican River at this point is only 150 cfs, the spillway is presently planned to carry 70,000 cfs. Engineers of the Bureau of Reclamation say the design is more than justified by the flood of 1935, when over 100,000 cfs roared down the river, drowning many people and damaging property in the valley.

Bonny Dam will be built of rolled earth in three zones. Its spillway and outlet works will be made of reinforced concrete. Zone 1 construction includes all but 1,000,000 cubic yards of the 9,200,000-cubic-yard embankment. There will be approximately 750,000 cubic yards of sand and gravel blanket material along the downstream toe. This zone is intended to be a filter bed for any water which might seep through the dam. The Zone 3 material will consist of random earth and rock from required excavations which is unsuitable for the other two zones.

The dam will be 9,300 feet long, 130 feet high referred to the riverbed, and about 1,000 feet wide at the base of the

(Continued on next page)

*C. & E. M. Photo*
**Stang wellpoints dewater the core trench of Bonny Dam; some 4,200 linear feet were used.**


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## Bonny Dam Dirt Work Begins in Spite of Rain

(*Continued from preceding page*)

maximum section.

### Organizing for Work

Under supervision of Project Manager James D. Fogg and General Superintendent L. D. Davidson, work got off to a good start. That was before rains and wind set in. The job was organized initially for an excavation production rate of 1,000 cubic yards an hour from each of three Euclid 9BV loaders assigned to the borrow pit.

The plan of work calls for the river to be diverted through a channel near Station 55+00 while construction of the main embankments on both sides of the river proceeds. Stage 2 diversion will be through the outlet works. The channel now in use can then be cleaned, the impervious earth core placed, and the two embankment sections tied together with another plug of compacted material.

Subcontracts were let for certain parts of the work as a part of its organization. All concrete construction was subbed to Horner & Switzer of Denver. This firm had already moved in and set up a new Blaw-Knox concrete batch plant, but no concrete had been placed in the spillway or outlet works at the time the job was visited.

Colorado Constructors, Inc., of Denver received a subcontract to strip the borrow pits and to build the access road from Colorado Route 51 in to the dam. Foundation stripping and excavation for the core trench went to Fred DeBetz. The Prineville, Oreg., contract firm of Gerald Miller subbed excavation work in the spillway and outlet channels.

A business agreement was made with Bailey, Inc., of Denver, Firestone Tire & Rubber Co. sales representative, to take care of all tire needs and repair, supplying of batteries and their service, and the furnishing of brake lining. Bailey, Inc., has a shop on the dam site, staffed 24 hours a day by men trained in the service of these accessories. When any of this material is required, the operators send an S O S for Bailey, and their men are soon at the spot.

Radiotelephone communication was established between the dam office and Burlington, Colo., about 30 miles south, and transmission masts were soon erected. First-class telephone service would have been impossible if this arrangement had not been made. Applications are now being processed by the Federal Communications Commission for five mobile two-way radiotelephone sets to link important executives together.

Hale, Colo., is a small place. It wasn't nearly large enough to accommodate all the men who will work on the dam. Organization therefore had to include some provision for housing the employees. A trailer camp was established at Hale, and another near the dam. Eight permanent houses will be built in Burlington for key executives and their families. The U. S. Bureau of Reclamation camp is in St. Francis, Kans.

### Selection of Equipment

As on all large undertakings, the selection of equipment was governed by the nature of the work. Material for Bonny Dam is almost all impervious sandy silt and clay. The average haul distance to the embankment from the two borrow pits is 5,000 feet one way. Hauling conditions are generally good, barring wet weather, and grades are not steep. Thus high-capacity loading equipment, capable of digging soft excavation at top speed, seemed in order. Fast, rubber-mounted hauling units seemed in order for the same reason.

Three Euclid Model 9BV 54-inch loaders, equipped with General Motors diesel engines, were selected as the loading units. These were shop-changed on the job to meet special conditions, as will be detailed a bit later in this article. The hauling fleet included 16 Euclid 9FDT bottom-dump hauling wagons, powered by 150-hp Cummins diesel engines. Later on in the spring, 12 more Euclid bottom-dump wagons were brought in. These machines were 9LDT's, rated at 25 cubic yards struck capacity, and powered by Buda DC1125 diesel engines of 275 hp.

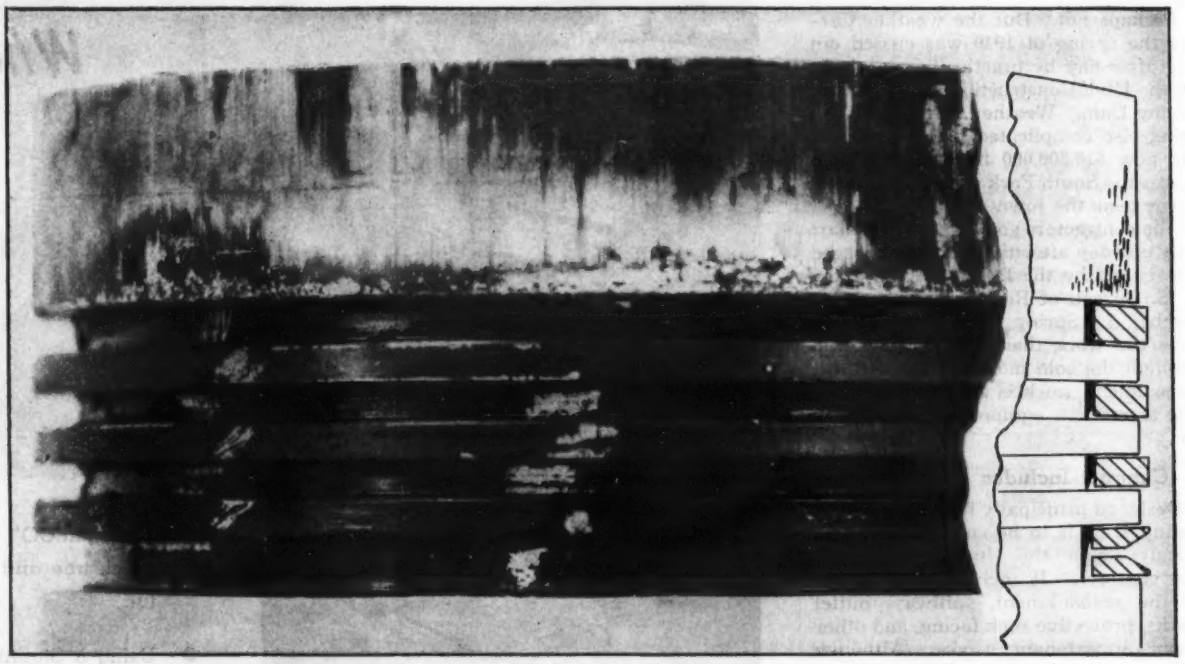
*C. & E. M. Photo*
**A Euclid loader, pulled by two HD-19 Allis-Chalmers tractors, sends a stream of dirt to a Euclid wagon during Bonny Dam earth-moving operations.**

Tractor equipment for various parts of the work included five Caterpillar D8's and nine Allis-Chalmers HD-19's. Three Caterpillar No. 12 motor graders were brought in to work the haul roads. Four Caterpillar DW10's were fitted up in the Denver shops of The McCoy Co. with special scarifier attachments and bulldozer blades. Their tires were also ballasted with water to make them heavier, and counterweights were added.

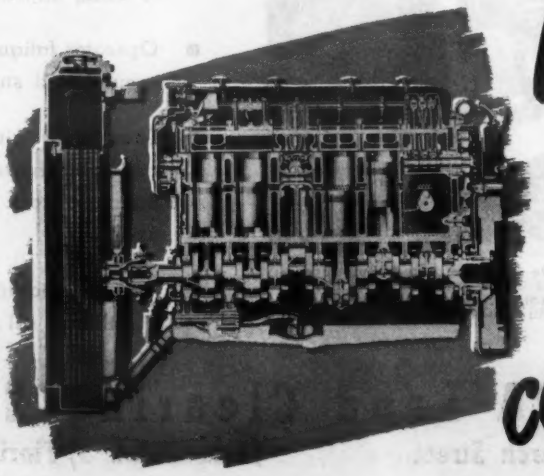
Processing-equipment selection also included heavy-duty machines, because specifications required high densities. Rolling equipment consisted of 13 special large 6-foot-diameter McCoy sheepsfoot tampers, built with 9-inch feet to Bureau of Reclamation requirements. These rollers each weigh 40,000 pounds ballasted with sand and water,

(*Continued on next page*)


# Do Your PISTON ...LOOK LIKE THIS?



**WITH REGULAR HEAVY DUTY OIL** – This photo of an actual piston shows a typical example of what happens to piston ring grooves under SEVERE DUTY service when regular Heavy Duty 2-104B motor oil is used. The drawing helps to clarify the condition shown in the unretouched photograph. Note the heavy deposits that coat all surfaces.



NEW SINCLAIR SUPER TENOL CUTS MAINTENANCE COSTS IN SEVERE DUTY SERVICE

but their larger-than-usual diameter makes them much easier to pull. A D8 will handle two of these units, and do it in second gear.

Processing equipment also included three 5,000-gallon sprinkler tanks mounted on Reo trucks, and one 5,000-gallon tank on a Euclid wagon bed. Because the borrow pits will be sprinkled before excavation, blending equipment other than the scarifiers is unnecessary, and 12 passes of the big sheepsfoot tampers develop the required density.

For night operation on the fill, there are 9 special light towers. These towers are mounted on a structural-steel skid framework, and can be moved around when necessary. At the base of each tower there is a 25-kw Le Roi-Westinghouse generator set, which turns out 120-volt single-phase current. At the top of each tower, five 1,500-watt lights are mounted and adjusted to cover a wide range of area. Below these powerful lights are four clusters of five 500-watt lights, also adjustable.

*C. & E. M. Photo*

**A 6-foot-diameter McCoy sheepsfoot roller compacts Bonny Dam earth fill.**

Water equipment includes 4,200 feet of Stang wellpoint system with the necessary Stang pumps for the dewatering and unwatering of the core trench. It includes also two Byron Jackson 4-stage pumps, rated at 900 gpm, driven by 75-hp electric motors. These pumps are used to furnish water to the south borrow pit through 8-inch headers and Armco Rainmaker pipe. There are also two Fairbanks-Morse pumps for the north borrow pit, and they are driven by a General Motors 180-hp diesel engine through a V-belt drive.

Power is generated for the pump motors by two 175-kw generators, powered by General Motors two-cycle diesel engines. These diesels are set up in a pump house above the dam. The wind has blown so hard here that it tore the roof off the building three times in that many months.

Equipment on the Fred DeBetz portion of the work consisted of four Caterpillar DW10's with earth-moving scrapers, two LeTourneau FP Carryalls pulled by D8 tractors, and one Caterpillar earth-moving scraper pulled by an Allis-Chalmers HD-19. Gerald Miller used seven 14-cubic-yard La-Plant-Choate Moto-Scrapers, and had 5 Caterpillar D8's for pusher work. A new Model C Tournadozer was also used.

### Euclids Are Altered

In its long experience on many jobs, Utah Construction Co. has developed certain ideas regarding the performance and life of its earth-moving equipment. All Euclid wagons of the 13-cubic-yard class and the three Euclid loaders were therefore changed to boost their output. This is no reflection on the performance of the units, obviously, since they were selected over their competitors.

The 9FDT Euclid wagons were altered first, with a view toward increasing their capacity from 13 to 21½ cubic yards. This work was done in the Salt Lake City yard of Utah Construction Co. It consisted of building up the wagon bodies, and then installing a high steel splash board on the right side of the wagon to prevent dirt from the loader from spilling over the side.

At that time no change was made in the engine. But new 36-ply tires replaced the standard tires on these trucks. The increase in size has resulted in no great damage to tires, and there has been only minor clutch trouble. A few of the 150-hp engines have reached the normal point for major overhaul, and as fast as this happens they are being replaced by the new improved Model DCS844 Buda automotive diesel engine, rated at 240 hp at 2,100 rpm. This is a supercharged engine, and, according to the mechanics on the equipment, all of the supercharged engines seem to deliver better performance at the higher altitudes.

Major changes have been made in the Euclid loaders, however. These changes are designed to equip this machine to make a 12-foot-deep cut, instead of the conventional 24-inch cut.

First of all, the factory plow was replaced with a 12-foot vertical cutter, sloped away from the plow point. The left main frame of the machine was also raised with a prefabricated arch to give the proper clearance for the vertical side cutter. This arch was so designed that dirt from the top of the cutter would fall on live dirt from the plow point, moving up the conveyor belt at that time.

The plow was set out 27 inches from the original point line, and the vertical cutter was sloped so its top was 25 inches farther out than the plow point as changed. The main axle was removed, reinforced, and the machine was strengthened at all points where the strain of higher-capacity operation would be likely to damage it.

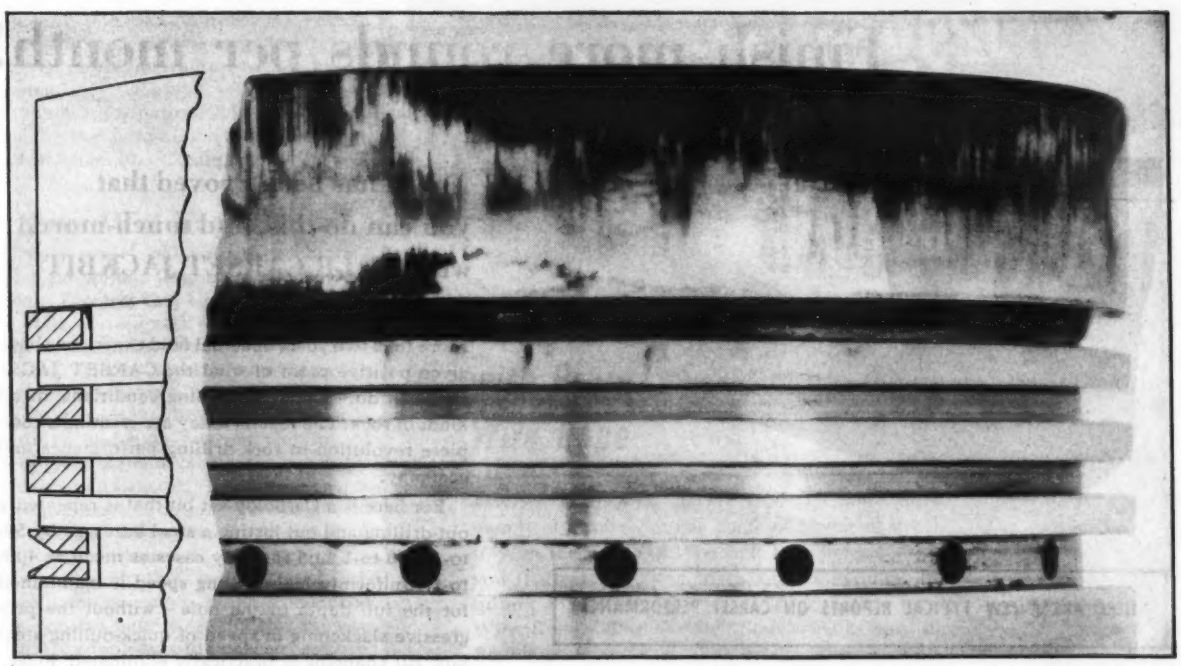
The yoke hitch on the front of the machine was offset to the right 12 inches. The Euclid loader has proved to be such a high-capacity machine that it tends to pull its towing tractors in toward the bank. It is expected that this change will give the tractors a little more room to fight the torque.

The elevator sideboards were raised 18 inches to carry the extra dirt dislodged by the longer cutter. And finally, the factory-equipped 180-hp General Motors diesel engine was replaced by a 275-hp Cummins diesel engine. According to Master Mechanic L. F. "Red" McCulla, "that devil will howl like a damn coyote when you put that 12-foot blade in the bank!"

At times the Euclid loaders have to stand the brute force of four HD-19

(*Concluded on next page*)


# RING GROOVES
## ...OR LIKE THIS?



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## Bonny Dam Dirt Work Begins in Spite of Rain

(*Continued from preceding page*)

Allis-Chalmers tractors, and at all times it has to take what three of these machines can do while pulling and pushing.

Changes to the loaders have resulted in 21½-cubic-yard loads in 38 seconds in good digging, with 7 seconds required for another wagon to get under the machine.

### Excavation Methods

There are two borrow pits at Bonny Dam. One is on the north side of the river. Its material is a sandy silt and clay, which requires on an average about 15 per cent of moisture for optimum compaction. The other borrow pit, on the south side of the river, contains more sand. This material requires about 12 per cent of moisture.

A preliminary borrow-pit sprinkling scheme is being used to get as much of the moisture into the material as possible. The big pumps send water from the river through 8-inch header pipes to the pits. The area to be sprinkled is first ripped to a depth of 4 feet by a LeTourneau K-30 Rooter, using a single tooth. Armco Rainmaker pipe is then installed at right angles to the header, and the pumps start to work. It was expected that the dry summer months would require 10 days of sprinkling to put the right amount of moisture into the material. Little sprinkling was required early in the season because of the heavy spring rains. In fact, rains stopped fill operations many times.

There are no corners in the borrow pits. The Euclid loaders move in a large circle, gradually closing in toward the center. The big 12-foot cutting blades on the machines take a slice from 4 to 8 inches thick, and the dirt falls down on the wide conveyor belt leading up to the top of the machine.

The weather has a great deal to do with this operation. If the ground is soft, shift bosses can't put out heaped loads as they like to. They have to load what the ground will bear, and keep a push cat handy to help the loaded vehicles away. But when the sun comes out and the ground gets firm, then it's another matter entirely. Then the operation is like clockwork. The big Euclid wagons roar up in a cloud of dust, take their loads, and growl as they pull out from under the loader.

Ordinarily each Euclid loader is operated by an HD-19 Allis-Chalmers tractor working in the draw yoke, with another HD-19 helping out as a snatch cat. Another HD-19 with a push block works behind the loader as a pusher tractor. Hydraulic torque converters in the HD-19 permit this machine to transmit its power without severe jerks or strain. It, too, has a supercharged General Motors diesel engine.

As motor graders polish the haul roads, Euclid wagons move their loads to the dam embankment. The core trench was filled with a tamped impervious core while 2,100 feet of Stang wellpoints lay on each side, dewatering the ground along the hole. There is no bedrock under Bonny Dam: there is only a cemented sand material referred to geologically as the Ogallala formation. Its presence has made core-trench unwatering somewhat difficult, but the wellpoints have done a satisfactory job with little trouble.

The dirt loads are bottom-dumped as directed by a flagman on the fill. The material is spread out immediately by one of the DW10's, scarified, and made ready for compaction. About 12 passes with the large rollers is almost always sufficient. The rollers are usually worked in batteries of three. A D8 Caterpillar is hooked to two sets, and an HD-19 Allis-Chalmers has one set behind with a Wooldridge pusher block in front. Thus the tractor works between the second and third roller set, pushing as well as pulling.

Nearly all the embankment stripping was completed by early summer. All the borrow pits were exposed, and work on the spillway and outlet-works excavations was well started by June. Project Manager Jim Fogg now has earth-moving work in high gear, with a peak of equipment units on hand.

"We hope to match Terrible Ted Terry's record at Davis Dam," he said, smiling, as if he realized that this is easier said than done.

By the end of 1949 the two embankment plugs should be out of flood danger, with a possibility that concrete work on the spillway and outlet works will be sufficiently up out of harm's way to cause little worry if the Republican River repeats its rampage of 1935.

### Leaflet on Signal Torch

Today's high-speed traffic requires that warning and signal torches be bright, safe, and dependable. The user requires that they be of rugged construction, and economical. A four-page leaflet claims these features for the Storm King signal torch made by the Universal Lamp Co., Springfield, Ill. Design of the Storm King, the catalog explains, provides extra-heavy corrugated-steel construction, a ¾-inch cast-iron base with a self-righting feature, one-piece burner with a simple cap lock, and large handles for easy carrying.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 99.


if it's VALUE you're after..... you'll get it in "NEVER-RIP" BRAND TARPAULINS

**Durable—Tough—Waterproof**

**12.41 oz. Close Woven Duck**

***Check these prices***

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| 14' x 16'..... | $14.56 |
| 14' x 18'..... | 16.38 |
| 15' x 20'..... | 19.50 |
| 16' x 20'..... | 20.80 |
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**CANVAS FABRICATORS, INC.**

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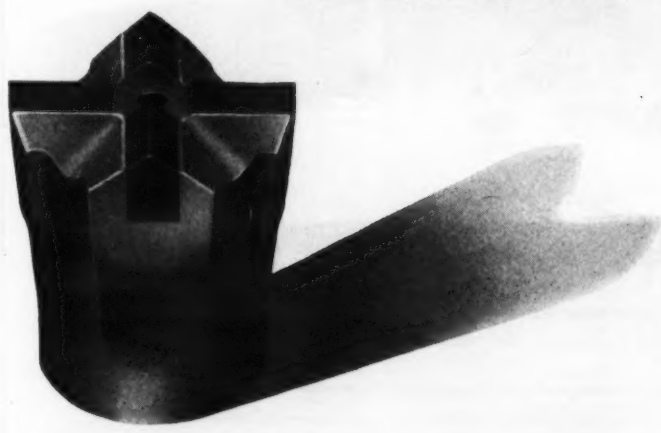
# Carset Jackbits

## Drill faster, 50% or more
## Boost tonnage 20% or better
## Finish more rounds per month!



**Now it has been Proved that you can do this, and much more, with the I-R CARSET JACKBIT**

More than two years of actual field experience have given positive proof of what the CARSET JACKBIT can do – under all drilling conditions, in all kinds of rock. The results today are creating a complete revolution in rock-drilling performance and economy.

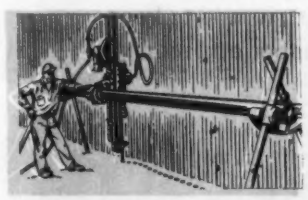
For here is a Carboloy-set bit that is repeatedly out-drilling and out-lasting a steel bit usage by 50-to-1, 100-to-1, and in many cases as much as 400-to-1! Uniformly high drilling speed is maintained for the full depth of the hole – without the progressive slackening in speed of quick-dulling steel bits. Bit changing is practically eliminated, longer steel changes can be used, and single-gauge holes can be drilled to any practical depth. This means more efficient drilling cycles, more rock or ore broken per shift – usually *20%* or more.

For the complete story on the CARSET JACKBIT, write today for your copy of our new 36-page, pocket-size catalog, Form 4091.

**HERE ARE A FEW TYPICAL REPORTS ON CARSET PERFORMANCE**

**A MINING COMPANY,** drilling in a very hard quartzite, reports that CARSET JACKBITS have so multiplied drilling speed that miners can now drill and blast on the same shift. With steel bits, blasting previously had to be done on the second shift. This customer has converted to CARSET JACKBITS 100%.

**ON A LARGE DAM PROJECT,** 2" CARSET JACKBITS were used with 4" Wagon drills operating in hard dense basalt. These bits drilled 24-ft. holes in 22 minutes, while steel bits previously used required 66 minutes for an 18-ft. hole (with 10 bit changes). Footage was increased from 120 to 261 ft. per shift.



**IN A GRANITE QUARRY,** CARSET JACKBITS have given such outstanding performance that steel bits are no longer used. Previously, with quick-dulling steel bits, the bit reconditioning shop had to be run two 8-hour shifts a day. This operation has now been almost eliminated.

**A MINING COMPANY,** in driving a 12 x 20 foot 97-hole heading in taconite, required an average of 49.8 hours to pull a 5-foot round. With CARSET JACKBITS they pulled 6½-foot rounds and cut this time to 18.5 hours. Accurate cost records showed a direct saving of $92.69 per foot of drift, or $602.48 per round.

CARSET JACKBIT — SET WITH CARBOLOY INSERTS

manufactured exclusively by

409-15

**Ingersoll-Rand**

11 BROADWAY, NEW YORK 4, N. Y.

The new hydraulically operated Sherman Power Digger works behind a tractor or at an angle, and dumps on either side. It can dig a 50-foot-long trench 6 feet deep and 18 inches wide in an hour, the company says.

## A Hydraulic Digger

A tractor-powered hydraulically operated digger for digging ditches, footings, culverts, drains, etc., was recently introduced by Sherman Products, Inc., Royal Oak, Mich. Its hydraulic pump is operated from the power take-off shaft of a tractor, and the digger works directly behind the tractor or at an angle, dumping on either side of it. To protect the tractor, a stabilizer frame on the tractor lift arms takes the digging thrust. To protect the digger, a relief valve by-passes the hydraulic pressure when the digger reaches the limit of any of its motions.

The company says that the unit has a below-ground surface reach of 6 feet, an 11-foot digging reach behind the tractor, and a 93-degree swinging arc. The standard shovel cuts an 18-inch-wide trench and has a capacity of 3.5 cubic feet. The manufacturer states that the entire unit can be installed on or removed from a tractor in 30 to 45 minutes.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 51.

## New Welding Units

A new model 200-ampere ac industrial-type welder is announced by The Lincoln Electric Co., Cleveland 1, Ohio. The unit is designed to handle a wide range of work in thick as well as thin material. It uses electrodes ranging in diameter size from 5/64 to ¼ inch.

Low-current welding of thin sheets is simplified and high-current welding of heavy plate is made faster, the company says, through Lincoln's arc booster. This booster is said to adjust the welder to start the arc automatically the instant the electrode touches the work. Fine adjustment of the welding current, through the complete range, is secured by a control handle. A dial on the top of the case indicates the current setting. The compact design is enclosed in a pressed steel case and is equipped with wheels for portability.

A small arc welder, operating off a 100-volt light circuit, is also offered by Lincoln. With a maximum output of 60 amperes, this unit is designed for a variety of light-gage metal working jobs as well as joining heavier material. The Lincwelder 60 is sold complete with a 6-foot insulated cord and a standard plug for the conventional 110-volt light socket, protective welding head shield and lens, electrode holder and 9-foot cable, ground cable, and a supply of electrode and brazing rods.

Further information may be secured from the company. Or use the Request Card at page 16. If interested in the 200-ampere model, circle No. 152; for the Lincwelder 60, No. 153.

## Steelcraft Buys Knapp

The Steelcraft Mfg. Co., maker of standardized steel buildings, steel casement windows, and other steel products, has acquired the metal-building-products inventory and machinery of Knapp Brothers Mfg. Co., but not its real estate in Joliet, Ill. A plant will be built on property adjoining the Steelcraft plant in Rossmoyne, Ohio, and the new business will be moved there. It will continue to operate under the Knapp name.

## Load Transfer at Joints

A catalog on H-bar and J-bar load-transfer devices for use in reinforced-concrete road work is available from Load Transfer Devices, 105 W. Madison St., Chicago 2, Ill. These units are designed to transfer the force of a wheel load passing over a joint from the dowel bars to the steel plates in the joint, at critical points.

The folder includes photographs which show the design of these devices. It also points out that Neoprene seals are available for both contraction and expansion joints and for any thickness and type of divider plate. The seals may be provided with any of the types of transfer devices shown.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 105.

Dalletts Contractor Tools

ASPHALT CUTTERS
•
MOIL POINTS
•
GADS
•
DIGGING CHISELS

DALLETT'S Line of Contractor Tools are made under rigid standards and from material best suited for their intended applications. Dallett's quality tools will always give top performance.

*Write for Bulletin C-220*

TOOL MAKERS PNEUMATIC DALLETT EQUIPMENT ACCESSORIES SINCE 1883

THE DALLETT COMPANY
MASCHER AT LIPPINCOTT STREET, PHILADELPHIA 33, PA.
Manufacturers of Pneumatic Tools and Accessories
DISTRIBUTORS in principal cities throughout the United States, Canada, Europe and South America.

Cut costs with the rope that lasts longest

Contractors are saving with Preformed "Blue Center" Wire Rope

WHEN YOU ASK "HOW LONG," don't think merely of a rope's length; think of how long it will stay on the job! The rope that lasts longest, costs you the least . . . and that's why contractors are turning to Roebling Preformed "Blue Center" Steel Wire Rope. "Blue Center" Steel—made only by Roebling—gives wire rope *extra* ability to withstand strain, abrasion and shock loads.

**PREFORMED SPEEDS OPERATIONS, TOO.** Roebling Preformed saves handling and installation time because it is not inclined to set or kink. You can cut it without seizing, and there's less trouble in applying fittings. In operation, Preformed is largely free of vibration and whipping . . . gives top performance despite severe bending, small sheaves and reverse bends.

**FREE ENGINEERING SERVICE.** Have your Roebling Distributor help choose the *right* wire rope for genuine economy on your equipment. If you have any special problems in the selection, installation or maintenance of wire rope, your Distributor will promptly get the assistance of a Roebling Engineer. John A. Roebling's Sons Company, Trenton 2, New Jersey.

*WRITE OR CALL THE ROEBLING FIELD MAN AT YOUR NEAREST ROEBLING OFFICE AND WAREHOUSE*

*Atlanta*, 934 Avon Ave. ★ *Boston*, 51 Sleeper St. ★ *Chicago*, 5525 W. Roosevelt Rd. ★ *Cleveland*, 701 St. Clair Ave., N. E. ★ *Denver*, 1635 17th St. ★ *Houston*, 6216 Navigation Blvd. ★ *Los Angeles*, 216 S. Alameda St. ★ *New York*, 19 Rector St. ★ *Philadelphia*, 12 S. 12th St. ★ *Pittsburgh*, 655 W. North Ave. ★ *Portland, Ore.*, 1032 N. W. 14th Ave. ★ *San Francisco*, 1740 17th St. ★ *Seattle*, 900 First Ave.

ROEBLING

☆ A CENTURY OF CONFIDENCE ☆

## Safety Parking Areas Along N. Y. Highways

During the past season, over 110 roadside safety parking areas were installed along the heaviest trucking and tourist routes in New York State. By next year, the New York State Department of Public Works hopes to have them every 5 to 30 miles along every main route in country areas on the entire state highway system. These areas are intended solely for tourists or truck drivers who wish to pull off the road and rest awhile so that they can reenter the traffic stream refreshed and therefore safer drivers.

The parking areas are located where the highway is reasonably level and straight or on the outside of broad curves, so that entrances and exits can be made safely. Many will be built in pairs across the highway from each other so as to discourage left-hand turns and pedestrian cross-overs. They are well outside cities and villages in order not to affect building-lot interests, and comfortably remote from all other classes of buildings in the country in case some of the users should prove inconsiderate of neighbors.

Most of them are large enough to accommodate two or three trucks or a half-dozen automobiles. They have firm pavements for all-weather use, and most of them have shade. A few picnic tables and trash barrels are the only facilities provided.

Official signs "Parking ½ mile" inform the motorist of the availability of off-the-highway parking space in ample time. The areas themselves are marked by a simple sign "Parking".

## New Pneumatic Tool Drives Screwsticks

A new Thor rotary pneumatic tool designed to drive Screwsticks, a development of the American Screw Co., Providence, R. I., is announced by the Independent Pneumatic Tool Co., 175 N. State St., Aurora, Ill. Screwsticks consist of a series of hexagon-head screws joined head end to thread end, in sizes from No. 0 to No. 4 screws. Thor explains that the driving of small-size screws can be speeded up by using the driver and Screwsticks, since each screw does not have to be picked up and started by hand.

The driver is a 1¾-pound machine measuring 6½ inches in length. It has a spindle offset of 9/16 inch and can be converted from one size to another. Its features include a rotary pneumatic motor with one-piece rotor and shaft mounted on precision ball and roller bearings; a clutch gear of the permanently engaged type, with a momentary-engagement type available if specified; maximum visibility due to nose-end design; ball-type leak-proof throttle valve; hose connection threads in cast-in steel inserts; bail for vertical suspension mounted in pressed-in steel inserts; and structural elements made from alloy steel, heat-treated. A long throttle lever and special flexible air hose are supplied with the tool.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 53.

## Tractor Snow Plow

Snow-plow attachments, both V and reversible-blade types, are now available for the 4-wheel-drive 1½-cubic-yard Model HM Payloader, manufactured by The Frank G. Hough Co., 822 Sunnyside Ave., Libertyville, Ill. These plows interchange readily with the bucket, says Hough, to make the tractor shovel useful in the winter for snow removal.

Features of this machine for snow-plowing service are 75-hp gasoline or diesel power, driving all four wheels; large pneumatic earth-mover tires; hydraulic power control for raising and lowering the plow; four speeds in each direction up to 24 mph; separate forward-reverse shift; power-boosted rear-wheel steering; hydraulic brakes; and operator visibility. An all-weather cab is available.

V-type or reversible-blade snow plows are now available for interchange with the bucket of the Model HM Payloader.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 46.

## Roller-Company Promotion

James F. McTeague has been appointed Assistant Sales Manager of the Buffalo-Springfield Roller Co., Springfield, Ohio. In this position he will work with the firm's distributors in all matters pertaining to sales, and will assist in coordinating domestic and export sales.

Before this appointment, McTeague had been connected with the Service Department of the company as Assistant Service Manager.

## Reproduction Equipment

A catalog on reproduction equipment is available from Peck & Harvey, 5736-38 N. Western Ave., Chicago 45, Ill. The new Ammo-Fume dry developer, a direct-process printer, continuous photo driers, stainless-steel developing tanks, and accessory equipment and chemicals are all described in the catalog. It includes illustrations and prices for each item. The equipment is designed for a variety of reproducing jobs on intermittent or continuous operation.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 80.


For *more* BATCHING SPEED..

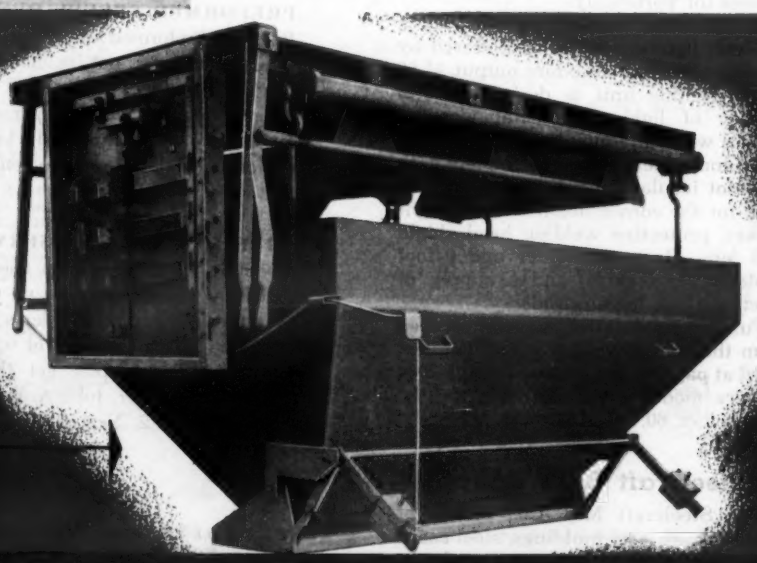
**JOHNSON *Hi-Speed* Batcher handles 2, 3 or 4 materials**

Where you want high-speed batching and extreme accuracy for uniform strength concrete every batch, *plus* quick convertibility to handle 2, 3 or 4 materials, check the Johnson Roadbuilders' Hi-Speed Batcher. Its extra-wide fill valves permit high-speed filling, and retain minimum batcher height.

Standard Hi-Speed Batcher has wide-discharge hopper and scale beams to handle standard batch for 34-E pavers. Self-loading, counter-weighted discharge gate on weigh hopper is easily tripped . . . opens wide . . . extra-steep angle of bottom cleans out hopper fast.

For charging truck mixers, Hi-Speed Batcher can also be equipped with 2, 3 or 4-yd. weigh hoppers. Truck-mixer type has 4-compartment bin . . . 1 for sand, 2 for aggregates, and 1 enclosed compartment for cement. Both truck-mixer hopper and wide-discharge hopper are interchangeable on the scale frame. Overhead unit frame supports all fill valves, hand levers, aggregate hopper and weigh beam box . . . provides convenient reassembly, and insures accurate alignment of scale parts at all times.

Let your Johnson Distributor show you *all* the Hi-Speed Batcher features that will help *you* produce top-quality concrete fast, with most economical use of materials.



One or two Hi-Speed Batchers can be used with Johnson Roadbuilder All-Purpose Type 81 (shovel)... gives you a big production combination.

Hi-Speed Batcher fill valves can be added or removed in the field, and the center spacing easily shifted for either 2, 3 or 4 material bins.

KOEHRING PRODUCT

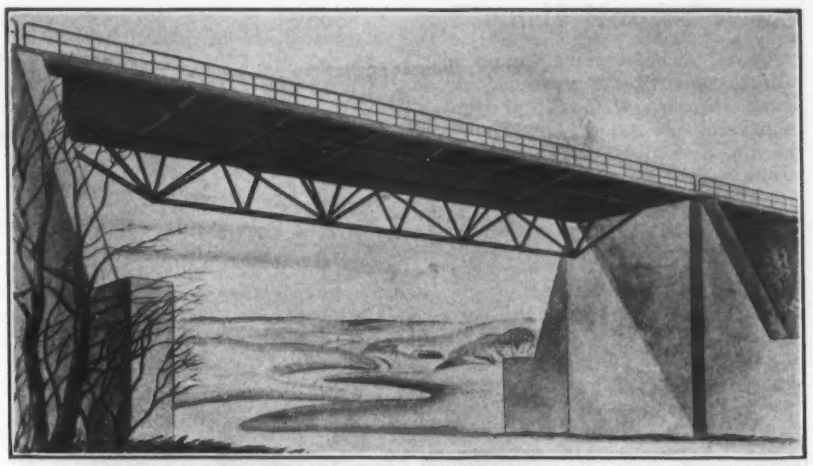
C. S. JOHNSON

## Awards Announced For Welded Bridges

The James F. Lincoln Arc Welding Foundation has announced awards totaling $6,250 to bridge designers for the best designs of a two-lane 120-foot-deck highway bridge with an all-welded construction. The awards are a part of the Foundation's "Welded Bridges of the Future" program.

The designs submitted suggest that the principles used in the modern rigid airplane may be effectively translated to the field of bridge construction. The $3,000 first award went to Thomas C. Kavanagh, a professor of civil engineering at Pennsylvania State College. Taking advantage of two new steel shapes, his design uses a compact triangular-shaped steel frame to support the bridge roadway.

Angel R. Lazaro, Jr., Malabon, Rizal, Republic of the Philippines, received the second award of $1,500. His plan featured a new Y-shaped steel member to reduce the number of steel pieces handled, the amount of steel used, and the amount of welding necessary without diminishing the strength of the bridge.



Thomas C. Kavanagh's design for a welded bridge won the first prize in a contest sponsored by the James F. Lincoln Arc Welding Foundation. It uses a compact triangular-shaped steel frame to support the bridge roadway.

Fred C. Miller of Toledo, Ohio, won the third award of $750. Ten honorable-mention awards of $100 were also made for outstanding designs.

## New Hydraulic Pump For Tractors, Trucks

A new series of Lear-Romec rotary-gear hydraulic pumps for tractors, trucks, and construction tools is manufactured by Lear, Inc., Romec Division, Elyria, Ohio. Model RG-7380 is intended for direct drive from an SAE flange-type magneto mounting pad. It delivers 5 gpm at 1,000 psi and 1,800 rpm and permits intermittent pressure of 1,500 psi. The pump uses any light petroleum-base oil.

Its case is of aluminum alloy with closely fitted hardened-steel impeller gears and lead-bronze bearings. A mechanical shaft seal incorporates an air-check device to prevent entrance of air during self-priming starts, and eliminate the hazard of entrained air in the oil system.

Ports are tapped for standard pipe thread, ½-inch NPT inlet and ⅜-inch NPT outlet. Rotation of the pump viewed from the drive end is clockwise. Counterclockwise rotation is optional.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 57.

## Pillow-Block Series

A series of normal and heavy-duty spherical roller-bearing pillow blocks has been announced by The Fafnir Bearing Co. of New Britain, Conn. Spherical roller bearings for these units will be manufactured by The Torrington Co., Torrington, Conn.

Fafnir says it now offers anti-friction-bearing pillow blocks for practically every requirement of speed, load, and operating condition encountered in construction and other heavy-duty fields. The new series will be available in bore sizes ranging from 2 7/16 inches to approximately 8 inches. They will be self-aligning, incorporating either felt or triple metallic labyrinth seals, and will be built for either straight-shaft or adapter-type mounting.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 110.

## Paved Corrugated Pipe

Typical applications and engineering data for flexible paved corrugated-metal pipe are covered in a 4-page bulletin issued by United Steel Fabricators, Inc., Wooster, Ohio. The bulletin explains that the flexibility, durability, and four-way protection offered by this pipe enable it to resist shearing and splitting actions caused by unusual earth movements, erosion caused by washing rocks and rubble, and corrosion caused by moisture, acid soils, or electrolysis.

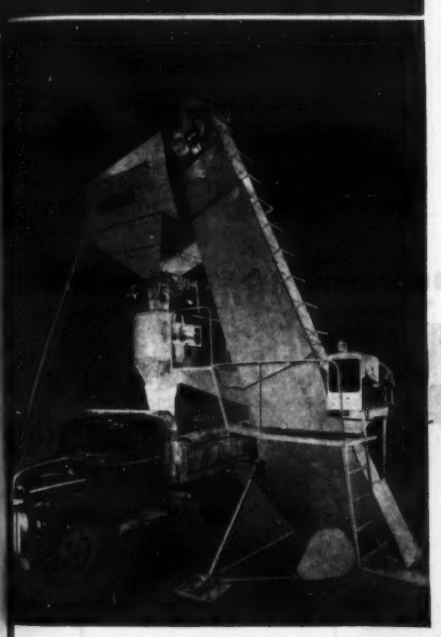
The bulletin points out that paved corrugated-metal pipe is well suited for culverts and storm sewers, to control seepage from sidehills and subsurface water, and to reclaim land or protect retaining walls and building foundations. The bulletin recommends gages for highway and railway culverts, and lists areas and weights of the pipe.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 72.

## Plant for Pneumatic Tools

A manufacturing layout like a motor-car assembly line marks the new $5,000,000 plant which the Chicago Pneumatic Tool Co. has nearly completed in Utica, N. Y. Faced with the problem of designing production lines for two basically different types of pneumatic tools, CP engineers laid out two 6-acre sections—one to manufacture tools with a rotary action, the other for tools with reciprocal action. Then a horseshoe production line was devised for each and the main plant was built around the whole, with separate buildings for the forge plant, power shop, etc.


D.. ACCURACY



**Save 25% with 205 shovel-pull shovel**

Koehring ½-yard 205 has dual-purpose boom for both shovel and pull shovel operation . . . costs 20 to 25% less than conventional units requiring two separate booms. Crowd and retract cable is self-contained in boom . . . stays intact when boom is removed . . . saves time when you convert to crane, clamshell, dragline. Get all the facts in new 205 bulletin.

KOEHRING COMPANY MILWAUKEE 10, WISCONSIN

**Use JOHNSON Elevating Cement Charger as Batch or Transfer Plant**

Here are quick facts on Johnson's new Elevating Cement Charger for batch plant operation or transfer plant to unload cement from either hopper-bottom or box-type railroad cars:

- Standard Charger has a size 14, 1000-lb. capacity cement weigh batcher, hung under a 33-bbl. overhead storage hopper.
- Upper hopper can be equipped with two 1000-lb. weigh batchers for charging dual-batch trucks.
- Quickly adapted from batch to transfer plant by adding 50-bbl. extension hopper.
- Has weather-tight, bucket-type elevator . . . 300 bbl.-per-hour rated capacity with buckets 80% filled.
- Extremely portable . . . easily moved and erected by standard dump truck. No crane needed.

CJ969

COMPANY
KOEHRING SUBSIDIARY
CHAMPAIGN • ILLINOIS

**Every batch a perfect mix**

Improved mixing action of the revolving drum of the Kwik-Mix 16-S Dandie mixes every batch of concrete for perfect texture. You get better concrete because every particle of the aggregate is completely cement-coated. Same thorough mix in all Kwik-Mix Dandie mixers including 3½-S, 6-S, and 11-S sizes.

KWIK-MIX COMPANY
KOEHRING SUBSIDIARY
PORT WASHINGTON, WISCONSIN

**Sidesteps side obstructions**

Boom of the Parsons 221 Trenchliner* quickly and easily rides on rollers from side to side across the full width of the Trenchliner. That's why the Parsons 221 Trenchliner can cut a trench as close as 10" from side obstructions. Trenches up to 8' depth, 16" to 36" wide.

*Reg. Trade-mark

PARSONS COMPANY
KOEHRING SUBSIDIARY
NEWTON, IOWA

# City Dump Stabilized To Carry Highway Fill

**Experiment in Stabilization Uses 50-Ton Pneumatic-Tire Compactor on Job at Binghamton, N. Y.**

✦ AN experiment in stabilizing a dump fill was recently completed at Binghamton, N. Y., by the New York State Department of Public Works. A Bros 50-ton pneumatic-tire roller with oscillating wheels was used. Tests were carried out under the direction of F. W. Donovan, District Engineer, and George W. McAlpin, Principal Soils Engineer of the Department.

The dump is a portion of an arterial highway system running through the city of Binghamton. It varies in age from 6 months to 15 years. The fill material ranges in depth from 5 to 20 feet, and is composed of the usual dump refuse—paper, rags, wood, glass, ashes, cans, metal, old tires. The percentage of these materials differs widely in depth and in horizontal directions, depending on the time and rate of dumping.

Previously the area was a meandering creek in low flatlands. Accordingly the material underlying the fill consists of unconsolidated organic silt and clay. The area now is a random, irregular fill with wide variations in density and load-carrying capacities. A light covering of earth blankets the fill and was placed with no specific effort to obtain compaction.

### Stabilizing the Fill

One suggested method for stabilizing the fill—excavating the unsuitable material and backfilling with acceptable borrow—was ruled out as too expensive because of the large quantities involved, the long hauls to dispose of waste, and the sanitary problem of moving waste through the city.

A second suggestion was adopted. It proposed the compaction of the material in place, to give it a uniform bearing value capable of supporting the intended arterial-highway fills. The procedure called for the use of a super-heavy compactor to compact the upper layer of fill and reveal the local weak spots; then reinforcement of the weak spots with sand and gravel and compaction of the area to a density that would

A Bros 50-ton pneumatic-tire roller compacts a dump fill during stabilizing tests conducted at Binghamton by the New York State Department of Public Works.

give a relatively uniform bearing support.

Two compaction tests were conducted on seven test sections. These sections were 200 feet long x 20 feet wide and were laid out in various locations of the dump so that fills of different ages and composition would be included. Progressive elevation profiles were taken to measure the amount of compression or displacement.

On the first five sections the compaction tests were made in three separate stages. In the first stage the Bros Compactor was used empty, weighing 12 tons. Twelve full passes were made. Next the same areas were re-rolled in twelve full passes with the Compactor loaded to 31 tons. In the final stage, with the Compactor at its full capacity of 50 tons, the areas were rolled until no measurable settlement was noticed. A D7 Caterpillar tractor was used to pull the Compactor empty, and an HD-19 Allis-Chalmers when the Compactor was one-half and fully loaded. This power was adequate except where the Compactor became mired in weak spots where foundation material did not give sufficient traction. In such cases a combination of the two power units worked satisfactorily.

During these first tests, local weak spots developed into which the Compactor sank as much as 4 feet. These areas were filled and leveled off with a thin layer of gravel before rolling was resumed.

In the second test the Bros Compactor was used at its full 50-ton capacity and the last two strips were compacted.

The objective of these two tests was to compare the action of the fully loaded Compactor on material not previously compacted to the action on material previously compacted by light rolling; and to record and compare the number and depth of local depressions in the two methods.

### Results Obtained

It was the general opinion of observers that a more satisfactory construction practice could be developed if the sections were rolled several times with the Bros Compactor loaded to 30 tons, followed by leveling of local depressions with sand and gravel, and then re-rolled to completion with the Compactor loaded to 50 tons.

As the test rolling progressed, it became evident that once the local weak spots were leveled with a layer of sand and gravel, and these spots properly compacted, the sections became strong enough to stand additional passes of the Compactor loaded to 50 tons, without any further measurable settlement except for some minor weaving under the pneumatic tires.

The average amount of settlement measured was approximately 1.5 feet, with some maximum depressions up to 4 feet deep in localized areas. In general, there appeared to be an increase in the density of the fill to a depth of approximately 4 to 5 feet.

## Data on Waterproofings And Hardeners for Concrete

A folder on waterproofings, dampproofings, floor hardeners, and masonry coatings has been issued by The Aquabar Co., Perry Bldg., Philadelphia 2, Pa. The catalog features a selection table which lists the Aquabar products by trade names, tells what each accomplishes, and gives directions for applying.

The folder stresses Duroplate and Durocon metallic hardeners for concrete floors, Aquatite liquid waterproofing for concrete and mortar, and Iron Clad surface hardener for concrete and terrazzo.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 77.


BUILDERS • CONTRACTORS

CUT COSTS With MULKEY'S All-Steel PORTABLE ELEVATOR It's Balanced

★ For bricks, blocks, mortar in buckets, sand, roofing, lumber, boxes, dirt, sacks, etc.

★ One man can handle and operate...easily trailed up to 35 miles per hour.

★ Clutch and Brake Assembly *own* design (Extra)

Basic Length 24 ft. • 17½ ft. Maximum Lift
8' and 14' Extensions Available
Also Available: 16' Elevator (Same Design)

Write for FREE Literature and Prices!

SAM MULKEY COMPANY
1621-KE Locust Kansas City 8, Mo.



CANCAP KEEPS OUT HARMFUL RAIN AND WEATHER

Light cast aluminum lid pops open as engine starts. No back pressure.

Lid closes as engine stops, snugly fitting over exhaust pipe sealing it against weather.

TRACTOR EXHAUST SYSTEMS NOW AUTOMATICALLY PROTECTED FROM DAMAGING RAIN, SLEET, SNOW

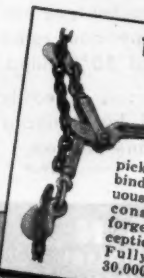
CANCAPS seal exhaust pipes from rain and weather, effectively protecting costly equipment from moisture damage. CANCAPS reduce maintenance and repair expense. Save you hundreds of times their cost. Made with a light weight, aluminum cap and cadmium plated bracket, CANCAPS provide quiet, long lasting protection. The lightweight cap completely overlaps pipe, yet provides a soft opening action with no back pressure. Simple construction permits easy installation. Just slip bracket over edge of exhaust pipe and tighten lock nut and it is on to stay. No fittings or bushings are needed. Fully automatic in operation, CANCAPS never forget, and whenever weather turns bad, your equipment is always protected.

*Order a supply now for the winter season ahead. Direct or from your dealer.*

Low Cost Protection— 3 Sizes Fit All Exhaust Pipes from 1⅜" to 4¼"

No. 2 CANCAP—fits all exhaust pipes from 1⅜" to 2⅜" . . . $1.90 ea.
No. 3 CANCAP—fits all exhaust pipes from 2⅜" to 3⅜" . . . 1.90 ea.
No. 4 CANCAP—fits all exhaust pipes from 3⅜" to 4⅜" . . . 2.75 ea.

TENSION-PULL LOADERS continuous chain load binders



Canton loaders pick up slack in chain and bind loads in one continuous action. Special alloy construction with drop forged hooks provides exceptionally rugged strength. Fully guaranteed up to 30,000 lbs. capacity.

The CANTON CAST PRODUCTS Co.
2408 THIRTEENTH ST., N.E. CANTON, OHIO

The Heller portable nailer loads over 100 lock-nails at a time. It drives and countersinks each in one blow.

## Nailer Loads Strip Of 100 Lock-Nails

A new hand-operated portable nailer with an automatic feed is now produced by The Heller Co., 2153 Superior Ave., Cleveland 14, Ohio. It is designed to drive through light metal and hard wood as readily as through soft wood.

It drives and countersinks with one blow the longest Heller lock-nail. The machine is said to be shockproof, lightweight, and balanced for easy driving; it loads over 100 lock-nails at one time. The Heller lock-nails come adhered in one strip for rapid loading. They are made in galvanized, copper, bronze, or electro-plated styles in sizes from 7/16 inch to 1⅛ inches long.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 122.

## Spot-Welding Unit

Tested and approved by Underwriters' Laboratories, a new development in a portable and self-operating spot welder is now being introduced by Greyhound A.C. Arc Welder Corp., 606 Johnson Ave., Brooklyn 6, N. Y. Weighing 23 pounds, it is enclosed in a compact and functional non-corrosive cast-aluminum housing.

Its transformer is wound with double spun-glass insulated magnet wire. The core of the transformer consists of high-grade electrical silicon steel, well proportioned with a high power factor, which is said to assure a fast heat, stronger weld, increased production speed, and reduced current demand. The spring attachment in the handle of the welder includes a unique time-saving feature. Removal of finger pressure from the handle automatically opens the welding tongs.

Available in both 110 and 220-volt ac models, 50-60 cycles, the portable tool welds up to ⅛-inch combined thickness of metal. The protruding copper arms are available in three interchangeable lengths—6, 12, and 18 inches—as well as in a variety of special shapes and sizes. Durable replaceable special-alloy tips are stocked in an assortment of shapes for specific welding problems.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 123.

## Wire Cloth, Woven Screens

A 44-page catalog, No. 36, on industrial wire cloth and woven-wire screens has been put out by Korb-Pettit Wire Fabrics & Iron Works, Inc., 1505-15 N. Mascher St., Philadelphia 22, Pa.

The booklet lists the dimensions of all of the company's products, including width of space or clear opening, diameter of wires, approximate weight, and proportion of open space to total screen area. The types include screens made of steel, high-carbon steel, copper, brass, bronze, aluminum, stainless steel, Monel, or nickel. The handbook illustrates and describes the various types of weaves and crimps available, and indicates the proper way to order and specify wire cloths or wire screens.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 71.

## Bulletin of Standards For Wire-Rope Sockets

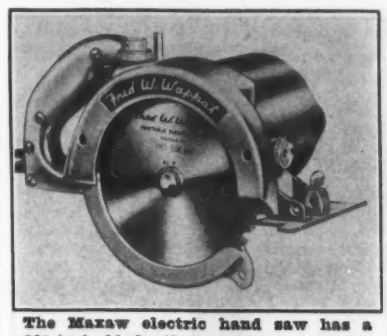
The first of a series of bulletins on standards for wire rope and accessories has been issued by the Wire Rope Institute, Shoreham Bldg., Washington 5, D. C. This bulletin, No. 1, establishes standards for wire-rope sockets. It tabulates all dimensions of both open and closed sockets for rope with diameters from ¼ to 2⅜ inches.

This literature may be obtained from the Institute, or by using the Request Card at page 16. Circle No. 109.

## Electric Hand Saw

The Maxaw, a new 6-inch lightweight electric hand saw, is now being manufactured by Fred W. Wappat, Inc., Mayville, N. Y. It has a 6⅜-inch blade that cuts to a full 2-inch depth on square cuts, and cuts 2-inch dressed lumber at a 45-degree angle.

The saw is able to make all jack-rafter cuts on light building jobs. Depth adjustment, built in as an integral part, is from 3/16 to 2 inches. Bevel adjustment, also built in, is from 0 to 45 degrees. The trigger-type switch may be locked on when necessary. Fitted with suitable blades, the Maxaw cuts Transite, marble, brick, concrete, tile, and other building materials. It weighs 10 pounds net.



The Maxaw electric hand saw has a 6⅜-inch blade that cuts to a full 2-inch depth on square cuts and cuts 2-inch dressed lumber at a 45-degree angle.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 124.

Now! EXTRA-LONG CRAWLERS
For LORAIN
DRAGLINES, CRANES, CLAMSHELLS
Enjoy these extra-long crawler advantages
1. Greater ground bearing areas. 2. Lower ground pressures. 3. Improved soft-ground flotation. 4. Elimination of "nosing-in" while digging.
Extra-wide crawlers, too
1. Available for TL and L-50 series. 2. Straddle wide trenches. 3. Distributes crawler ground pressures to prevent cave-ins.
OVER 160 LORAIN COMBINATIONS TO SELECT FROM
3 series of models with new capacities and many new crawler and rubber-tire mountings, make the Lorain line more complete than ever before . . . the most complete assortment in the field. Today your Thew-Lorain distributor can fit your requirements exactly.
THE THEW SHOVEL CO.
LORAIN, OHIO
MORE FOR YOUR $ IN A LORAIN
THEW · Lorain ®
CRANES · SHOVELS · DRAGLINES · HOES · MOTO-CRANES

A hard and uniform blow, rapid action, and minimum recoil are a few of the features claimed for the Cleco RC-80 pneumatic paving breaker.

## New Paving Breaker

A new RC-80 pneumatic paving breaker has been announced by the Cleco Division of the Reed Roller Bit Co., P. O. Box 2119, Houston 1, Texas. It incorporates the new Reed-Cleco rock-drill type of valve which is said to give full control of both power and reserve stroke. The features claimed are a hard and uniform blow, rapid action, minimum recoil, easy "riding" qualities, and low air consumption.

The reversible grooved piston is cushioned on the power and return stroke to reduce operator fatigue and eliminate side rod breakage, the company says. An air reservoir in the back head is designed to supply a uniform air pressure to the piston. Oversize air porting permits a longer stroke and full pressure on the piston during the power stroke. The oil reservoir provides automatic lubrication, and a pressure-seated throttle valve controls the shut-off.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 47.

### Information on Cordage

A 32-page catalog on manila rope and rope making has been issued by the American Mfg. Co., Noble and West Sts., Brooklyn 22, N. Y. Fully illustrated, this booklet describes standard construction of manila rope, its applications, methods of selecting proper sizes, safety precautions to be observed in handling rope, splicing and knotting techniques, and a weight and strength chart of cordage made by the company.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 127.

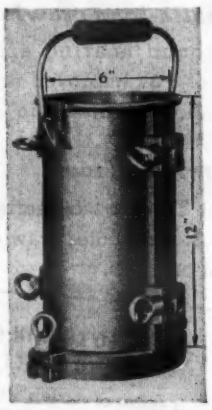
### For Bucking Heavy Snows

Very few jobs call for such high standards of equipment dependability as that of snow removal. Twenty-four-hour working days, extreme cold, blue ice drifts 10 feet high—these are some of the problems considered in a booklet released by the Caterpillar Tractor Co., Peoria 8, Ill. Its eight pages of illustrated material provide first-hand data on snow clearance and control work with Caterpillar plows and bulldozers.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 63.

This unit, the new Ware Hydro-Trencher, which was given its first public showing at the New England Highway Exposition in Boston, is here mounted on an Oliver Model 88 tractor. It is preparing a trench for pipe-laying operations.


MOLINE CONCRETE TEST CYLINDER MOLD

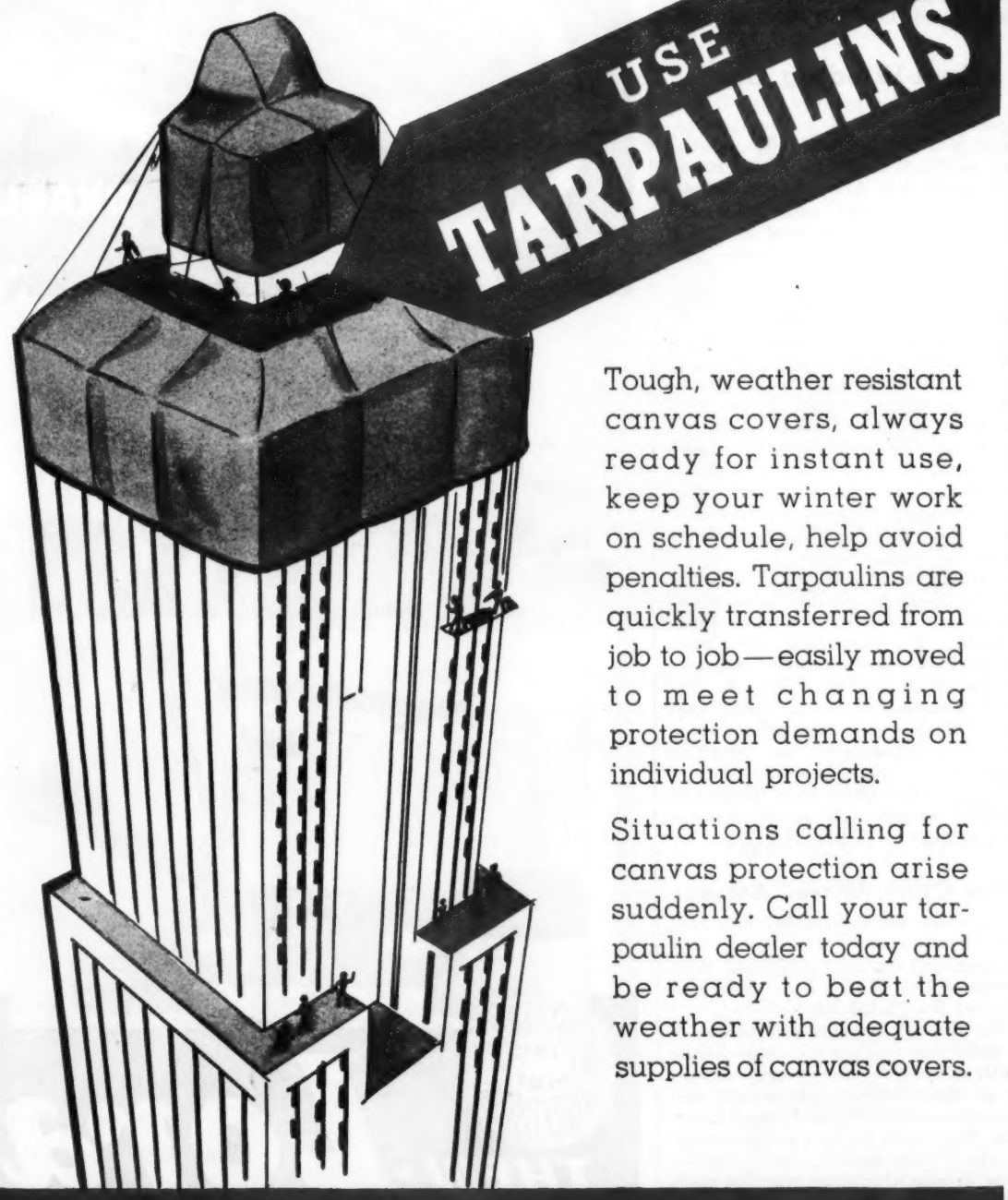



For concrete samples of exact measurement. Made of refined malleable iron, accurately machined, with bronze wing nuts and swing bolts.

MOLINE IRON WORKS
MOLINE, ILLINOIS, U.S.A.
Seventy Years of Service



FINISH YOUR JOBS ON SCHEDULE




Tough, weather resistant canvas covers, always ready for instant use, keep your winter work on schedule, help avoid penalties. Tarpaulins are quickly transferred from job to job—easily moved to meet changing protection demands on individual projects.

Situations calling for canvas protection arise suddenly. Call your tarpaulin dealer today and be ready to beat the weather with adequate supplies of canvas covers.

NATIONAL COTTON COUNCIL · MEMPHIS, TENN.

*Technisch Handelsbureau, G. T. & W. Visser Photo*

**Holland is finding good use for cast-in-place piling in foundation work. Prefabricated concrete buttons feature the typical pile in general use.**

# Cast-In-Place Piling Employed in Europe

### Safety, Economy, and High Bearing Power Obtained With Steel and Concrete Prefab-Button Piles

✦ ACCORDING to reports from the Technisch Handelsbureau, G. T. & W. Visser, Holland, that country is finding good use for cast-in-place piling in foundation work. Both safety and economy are realized with concrete and steel piles that develop bearing power of as much as 100 tons. Prefabricated concrete buttons are a feature of this pile, and driving takes no longer than with other piles of similar size. The satisfactory results obtained with this type of construction indicate that it will be given a test in other countries.

A typical pile in general use consists of an outer cylindrical shell of high-quality steel, ¾ inch thick and 17 inches in diameter. Inside of this is another steel shell from 6 to 10 inches in diameter. For piles of 50 feet or less in length, the 6-inch size has been found adequate; for longer piles the diameter of the inner shell is increased.

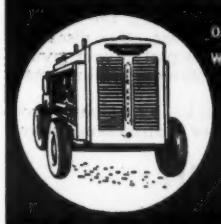
In the space between the two shells are six vertical tubes which are hung from the inside shell. These vertical tubes are of thin metal, 1½ inches in diameter, and serve as guide or steering tubes for the reinforcing steel running from top to bottom of the piles. As the concrete is placed in the pile, these steering tubes are lifted out after they have served the purpose of holding the steel in position, together with the inner and outer steel shell, and are used over and over again. By means of these tubes the reinforcing steel is always precisely located and properly encased in concrete. This is important during the casting operation, since the concrete must protect the steel from the infiltration of ground water after the outer shell is removed.

#### Prefabricated Button

At the pile tip is a prefabricated reinforced-concrete button with an average diameter of 17 inches. The bottom of the vertical reinforcing steel is embedded in this button. From the tip the pile tapers upward, gradually increasing in diameter.

Driving of the outer shell with the button in place is done in the conventional manner by means of a driving rig and leads. The inner casing and steering tubes, hanging free in the shaft, are not subject to any shock from the driving. The concrete is then cast in place, filling the pile, after which the outer casing is withdrawn from the ground. For piles more than 70 feet in length, which cannot be conveniently handled in the pile leads available, two casings or shafts can be used. These telescope into each other to form one long, tapering, V-shaped pile.

DAVEY COMPRESSORS



ONLY COMPRESSOR WITH PERMANENT PEAK EFFICIENCY LIFETIME VALVES

DAVEY COMPRESSOR CO. KENT, OHIO

## Hyster Personnel Changes

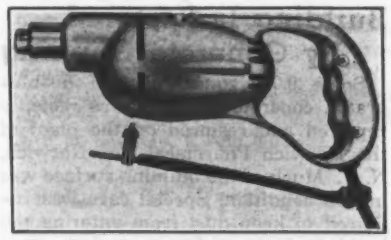
John Mitchell, formerly retail salesman in the Hyster Co. Chicago store, has been promoted to the position of District Manager of Truck Sales for the northeastern section of the country. His background includes several years as a materials-handling engineer.

In another promotion, John Cusick was named Lift Truck Sales District Manager responsible for the central portion of the United States. Mr. Cusick, who has been with Hyster since 1944, has filled several sales positions including work in the export department.

W. J. O'Brien was made District Manager in the southwest territory, C. E. Houston in the northwest, and Fred Schultz in the southeast.

## Utility Hand Drills

Three new streamlined ¼-inch general-utility drills have been announced by Cummins Portable Tools, 4740 N. Ravenswood Ave., Chicago 40, Ill. They are similar except for their chucks: Model 150 has a Jacobs 1B geared chuck, Model 160 has a Jacobs hexagonal key chuck, and Model 170 has a keyless chuck.



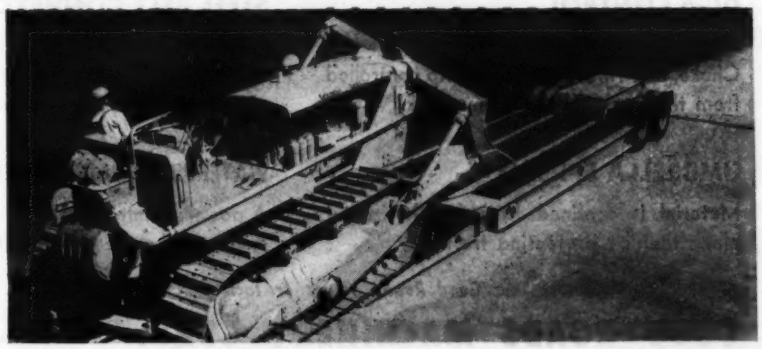
**The Cummins Model 150 general utility drill has a Jacobs 1B geared chuck. It has a ¼-inch capacity in metals and ½-inch in wood.**

The drills have a ¼-inch capacity in metals and ½-inch in wood. A die-cast aluminum frame is used for compactness and light weight. The universal-type motor takes 115-volt ac or dc current. Air is drawn through vents in the rear housing, passes around the motor, and is expelled at the front. The natural-grip handle is designed to fit the hand comfortably.

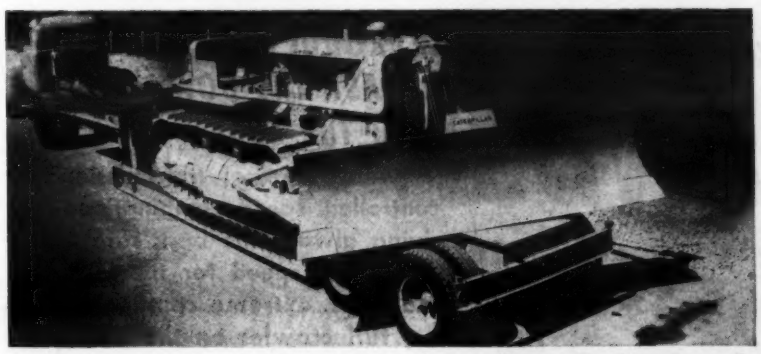
Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 120.

# NEW EQUIPMENT

The Martin Machine Company, Kewanee, Illinois, has introduced a new trailer featuring a patented Folding Gooseneck which, when lowered to the ground, forms a loading ramp. The new trailer, in capacities up to 100-tons, eliminates cumbersome loading ramps and cribbing, reduces idle man and equipment hours. Loading can be accomplished by one man in a fraction of the time formerly required by several men. Low platform height, accomplished by front loading, provides greater clearance for viaducts, bridges and wires, assuring fast, safe movement between jobs. Like other Martin "Carryhaul" trailers, the new Folding Gooseneck will be sold exclusively through "Caterpillar" dealers. The sequence photos below show actual operation of the new Martin Folding Gooseneck.



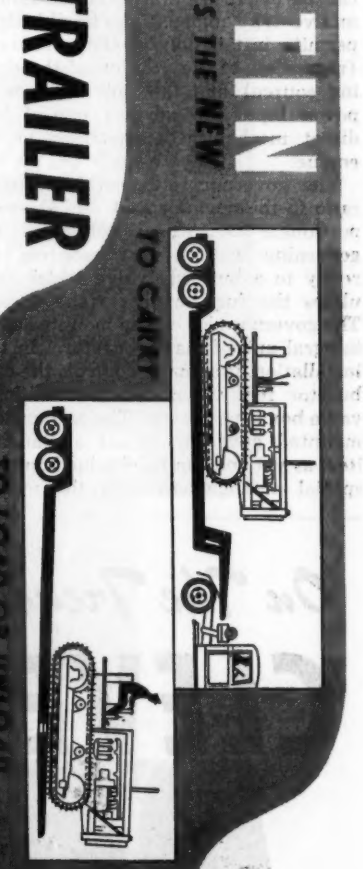
**Folding Gooseneck lowered to form ramp for loading D-8 "Caterpillar". Loading ramps and cribbing are eliminated. One man loads.**



**Folding Gooseneck being raised to towing position. Loading is easily accomplished in 5 minutes.**

**Ready to roll. Note low platform height which provides maximum clearance for viaducts, wires, bridges — greater safety.**

MARTIN PRESENTS THE NEW FOLDING GOOSENECK TRAILER



TO CARRY ... TO LOAD OR UNLOAD

MARTIN CARRYHAUL TRAILERS

MARTIN MACHINE COMPANY KEWANEE, ILLINOIS—YOUR CATERPILLAR DEALER

Write for complete information and specifications on the new Martin FOLDING GOOSENECK TRAILER.

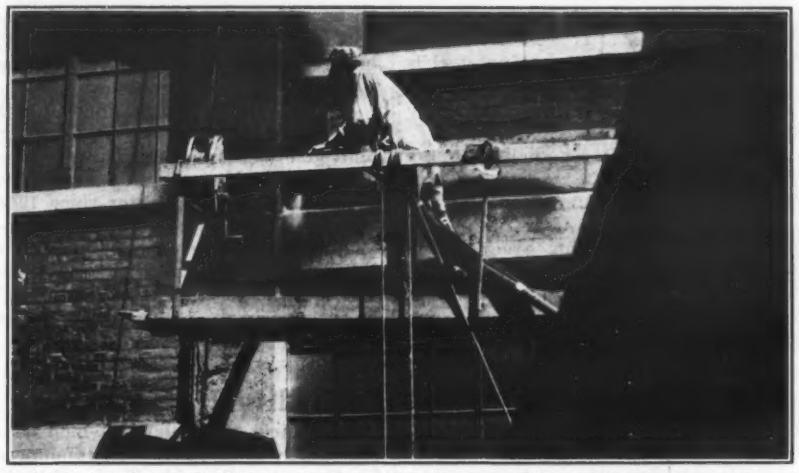
## Building Is Restored By Concrete Gunning

Some 9,000 square feet of disintegrated concrete masonry was recently repaired and restored on the plant of the Norwich Pharmacal Co., Norwich, N. Y. Much of the building surface was in bad condition. Special care was required to keep dust from entering the building during refacing work.

It was first necessary to chip out all loose and disintegrated material. All windows were covered with plywood to prevent infiltration of the dust during the chipping and sandblasting operation. The cleaned surface was then built up by pneumatic application of a 3½ : 1 Guncon mixture. A Prehy concrete gun was used for both the sandblasting and the Guncon work.

To prevent deposits on the brick masonry panel during the operation, fine and accurate work was required. It was performed from scaffolding which covered the distance between pilasters. Work started at the top in each stage and was completed to the bottom; then it began again in the next bay.

The job was performed by Pro-Con, Inc., Court Square Bldg., Binghamton, N. Y. The company specializes in this type of work on a national basis.



Disintegrated concrete masonry on a building is restored by a 3½:1 Guncon mixture applied with a Prehy gun. The job was performed by Pro-Con, Inc.

## New Speed Governor

A centrifugal-type engine speed governor featuring a flexible drive shaft is a new development of the Pierce Governor Co., of Anderson, Ind. It is a fully enclosed high-precision unit that can be installed on any standard automotive-type engine. The flexible drive permits installation at the carburetor (regardless of the position of the driving source) and the unit receives its power input through any one of four direct mechanical connections to the engine.

The governor is driven in constant ratio to the engine speed, and the proportionate centrifugal action of the governing weights is transferred directly to a butterfly valve which regulates the fuel supply to the engine. The governor also can be mounted as an integral unit of the carburetor. In this installation, it actually controls the carburetor fuel valve and no additional valve box is necessary. The carburetor-mounted governor is not a standard item as yet and can be obtained only by special arrangement with the manufacturer.

The governor receives power input from practically any available outlet through the use of a pulley or gear adaptor or by utilizing a standard distributor adaptor. Also available for some engine models is a special distributor with a tachometer outlet to which the governor cable can be attached.

The manufacturer states that the direct connections to the carburetor and to engine power made possible by the cable drive give positive engine speed control, and that the new governor is easily adapted to a variety of engine types and requirements because of its compact design and the elimination of excessive linkage and accessories.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 125.

## Roebling Denver Office

John A. Roebling's Sons Co. of Trenton, N. J., has opened a new office and warehouse at 4801 Jackson St., Denver, Colo., to serve its wire-rope customers and agents. Homer H. Davis is Manager, assisted by Roy H. Hainsworth.


it's "The Jet" with DC-6 CONTROL
DIRECT CAB

CAPACITY 7 CUBIC YDS.

FOR SEAL-COATING . . . ICE AND SLEET CONTROL

WIDTH OF SPREAD:
FROM 12 TO 28 FT. FOR SEAL-COATING.
FROM 12 TO 60 FT. FOR ICE AND SLEET CONTROL.

DC-6 CONTROL - - - - - - - - -
Ignition, Starter, Flasher Lights, Clutch, Choke, and Throttle are fingertip controlled from the truck cab. Fits any truck.

STEEL BELT CONVEYOR - - - - -
The controlled intermittent action shakes materials down through the wide throat onto the twin spinner discs.

UMBRELLA SPREAD - - - - - - -
Material is confined to a low horizontal plane thereby protecting traffic.

WATERPROOF, AIR-COOLED MOTOR - -
A powerful unit capable of driving the twin spinners at a speed of 2400 r.p.m.'s.

SPREADS ANY MATERIAL:
SAND
GRAVEL
LIME
SALT
CINDERS
CALCIUM-CHLORIDE
ANY OTHER DESIRED

Contact your Good Roads Dealer or factory for further detailed information or a demonstration

GOOD ROADS MACHINERY CORP. - - - - - - - - - - MINERVA, OHIO



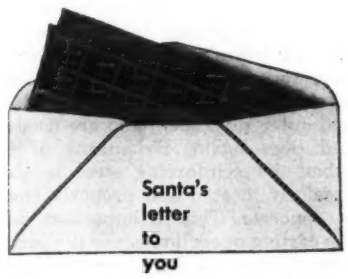
On The Trenching Jobs
CLEVELANDS

• PRODUCE THE YARDAGE
• SLASH THE DOWN TIMES
• CUT THE COSTS

A wide range of transmission controlled speed combinations giving always the best, safest and fastest speed for the job conditions, extreme compactness, full crawler on-the-job maneuverability and truck speed mobility enable CLEVELANDS to deliver maximum yardage. Rugged, finely engineered unit-type quality construction assures uninterrupted performance, reduces materially times-out for repairs and combined with low fuel consumption cuts maintenance and operating costs to a minimum.

THE CLEVELAND TRENCHER CO.
20100 ST. CLAIR AVENUE • CLEVELAND 17, OHIO






Answer the *once-a-year* Christmas Seal letter . . . and you make possible the *year-round* giving of health, life itself.

Your contribution will support the research, education, case-finding, and rehabilitation programs of the National Tuberculosis Association and its affiliates — which since 1904 have helped to spare almost 5,000,000 lives. Yet, TB still kills more people between the ages of 15 and 34 than any other disease.

So, please, as part of your giving this year, remember Christmas Seals.

Answer the letter that saves lives — send in your contribution, today.

BUY CHRISTMAS SEALS

## Quick-Reference Chart For Concrete-Drilling Bits

A quick-reference chart which enables construction workers and installation or maintenance men to determine the correct size of concrete-drill bit to use for any given size of pipe, conduit, machine bolt, or concrete anchor has been issued by the Tilden Tool Mfg. Co., 1995 N. Fair Oaks, Pasadena 3, Calif.

To use the chart it is necessary only to locate the diameter of the pipe, conduit, etc., to be installed. The correct size of drill bit appears directly opposite. Or the procedure can be reversed, reading from the drill size to the diameter of pipe, etc., for which it may be used.

The chart is designed to resist hard use, and dirt and grease may easily be wiped from its surface. It may be used as a wall chart or carried on jobs.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 67.

## Catalog Describes Tires

A 2-color 16-page booklet describing automobile and truck tires has been issued by the Penetred Corp., 106 West Arnold St., Marshfield, Wis. The catalog presents operation records for both trucks and automobiles using Penetred tires. It also includes an explanation of how Penetred tires are made, and illustrates the methods of placing the more than 5,000 tempered steel claws used in the Penetred process of manufacture. Specially processed wire coils are inserted in the tire molds; the tire is then placed in the Penetred mold and vulcanized under proper heat and pressure conditions into one unit in which the Penetred wire is an integral part of the tire tread.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 27.

## Folder on Saw Clutch

A folder on the Lowther C-Saw clutch has been issued by the Harry A. Lowther Co., 141 W. Jackson Blvd., Chicago 4, Ill. The catalog completely describes the clutch, explaining all features and uses, and the method of installation. The clutch is designed to speed saw starting, increase efficiency and safety, and reduce upkeep.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 121.

## Returns to Westinghouse

Hendley Blackmon, Managing Editor of *Electrical World* since 1947, has been appointed Assistant Manager of Engineering Association Activities for Westinghouse Electric Corp. Headquartered at the East Pittsburgh Works, he will work with Westinghouse engineers in the preparation of papers to be presented before engineering associations. Mr. Blackmon was formerly associated with Westinghouse from 1925 to 1945.


Marmon-Herrington

ALL-WHEEL-DRIVE

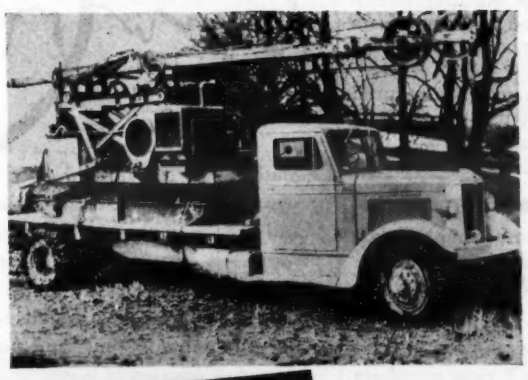
wherever the going is tough

There are literally hundreds of tough trucking jobs that trucks of conventional drive can't handle. Lack of tractive power is the big reason.

Marmon-Herrington *All-Wheel-Drive* Trucks are the made-to-order answer. Live power and traction in all wheels—*front wheels pulling, rear wheels pushing*—gives them the sure-footed tractive power of crawler tractors, plus truly amazing speed and maneuverability. Here are trucks that carry on where those of conventional drive stop—trucks capable of transporting peak payloads through deep mud, sand and snow, up steep hills and mountain grades—speedily, easily, economically.

Marmon-Herrington offers twenty-two *All-Wheel-Drive* models in all. Four are heavy-duty models of the company's own manufacture; the balance are standard Ford models converted to *All-Wheel-Drive* by Marmon-Herrington. Wheelbases range from 110 inches to 220 inches—gross vehicle weights from 5,300 pounds to 42,000 pounds. There are 7 great engines, Diesel and gasoline—from 4 to 10 forward speeds, 1 to 4 reverse.

For a demonstration of almost unbelievable performance-ability, see your Marmon-Herrington *All-Wheel-Drive* Truck dealer. There's one near you.



MARMON-HERRINGTON COMPANY, INCORPORATED

MARMON-HERRINGTON

Indianapolis 7, Indiana

Chrysler fluid drive features the new Wagnermobile Model C scoop loader.

## Fluid-Drive Loader

A Wagnermobile scoop loader with Chrysler fluid drive has been introduced by Mixermobile Manufacturers, 6855 N. E. Halsey St., Portland 16, Oreg. The manufacturer states that this fluid drive, the first in the materials-handling field, provides smooth power from standing start to highway speeds, as well as fast maneuverability. The Model C scoop is powered by a Chrysler industrial 6-cylinder 114-hp engine.

Attachments for this loader include: swivel concrete hopper, scoops in five sizes, lift fork, crane boom, and track extensions to a total of 26 feet. The Model C has standard steering but power steering may be obtained if desired.

Specifications indicate a minimum height of 98½ inches with the track folded. The unit has 8:25 x 20 drive tires, 9:00 x 16 rear tires, and a load-lifting capacity of 4,000 pounds. The chassis is of welded plate-steel construction.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 137.

## Small Welding Unit

A new line of welders, known as Bantam Champ dc arc welders, has been developed by Hobart Bros. Co., Box 489, Troy, Ohio. The electric-motor-driven Model MZ-200-S examples this line. Its current range is from 40 to 250 amperes at an operating speed of 3,450 rpm. It is 26¼ inches long, 18 inches wide, and 25 inches high. The generator is a modified multi-range type with 4 laminated main poles and 4 removable interpoles. Its welding controls are modified multi-range dual control, with 5 ranges of welding current and 100 steps of volt-ampere adjustment in each range.

A squirrel-cage induction-type electric motor is used; its rotor bars are welded to form a solid copper squirrel cage. No bolts or rivets are used in its construction. Voltage change-over terminals are provided on the starting switch. Motor leads are brought out to the terminals on the starting switch and can be reconnected to change from 220 to 440-volt power supply and vice versa.

Futher information may be secured from the company. Or use the Request Card at page 16. Circle No. 28.

## Western Timber Directory

The West Coast Lumbermen's Association has issued the second supplement to the January 1, 1949, edition of "Where to Buy". This latest addition to the directory of the members of the Association is dated August 1 and includes the names of all new members subsequent to January 1, 1949. It gives detailed information as to the capacity, facilities, and lumber items manufactured by each. It also lists the dealer services available.

If specified, both the Supplement and the January 1, 1949, "Where to Buy" will be sent. Write West Coast Lumbermen's Association, 1410 S. W. Morrison St., Portland 5, Oreg. Or use the Request Card at page 16. Circle No. 134 for the Supplement; No. 135 for "Where to Buy".

## Heavy-Duty Transmissions

A catalog outlining a complete line of heavy-duty transmissions has recently been issued by the Fuller Mfg. Co., Inc., Transmission Division, Kalamazoo, Mich. The relative sizes and capacities shown in the booklet are only generally indicated by weight and by maximum engine size in terms of displacement. These sizes are intended only as a tentative basis for preliminary selection.

Fuller heavy-duty unit-mounted, auxiliary, and amidship-mounted transmissions are described and illustrated. Designed for use with straight and tractor-type trucks engaged in heavy-duty transport, these transmissions are said to provide a wide range of operation with a large degree of flexibility.

Included on the inside back cover is a specification sheet which may be filled out and submitted for transmission recommendations.

This literature may be obtained from the company, or by using the Request Card at page 16. Cicle No. 94.

## Air-Lift Paving Breaker

The "air lift" of the Air-Jac paving breaker is featured in the new 52AJ bulletin offered by the Le Roi Co., 1700 S. 68 St., Milwaukee 14, Wis. It explains how line air pressure is utilized to lift the 80-pound-class breaker and free stuck steels. The 52AJ is an adaptation of Le Roi-Cleveland's Model 52 heavy-duty paving breaker, with an integral air-lift cylinder operated from the breaker handle. A force of 100 pounds can be developed to assist the operator in handling the tool and freeing stuck steels.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 12.

## Pipe and Tubing Catalog

A 4-page reference folder on pipe and pipe fabrication has recently been issued by the L. B. Foster Co., 11 Park Place, New York 7, N. Y. It includes complete information on pipe sizes, prices, weights, and dimensions. It explains the services offered by Foster's warehouses and pipe-fabrication department, and lists additional catalogs available on the company's line of rails, track accessories, sheet piling, and wire rope.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 39.

## Sales Manager for Haiss

The George Haiss Mfg. Co., Inc., New York City, division of Pettibone Mulliken Corp., has announced the appointment of William E. Madden to the office of General Sales Manager. Mr. Madden was recently elected Vice President of the company.


POUR CONCRETE PIERS OR COLUMNS

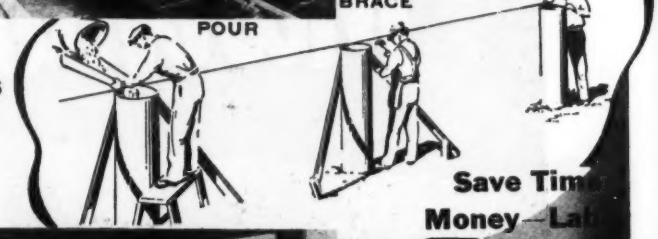
Up to 24" in diameter

With Sonotubes laminated fibre tubing

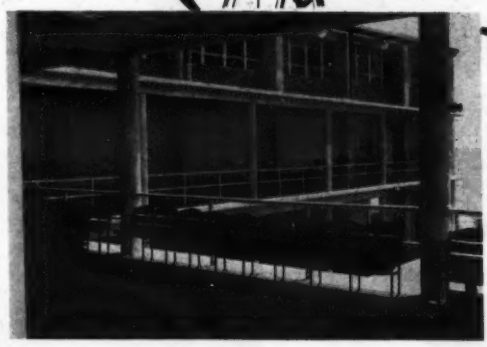
PAT. APP. FOR.

SONOTUBES arrive at the job ready to use in lengths up to 24'—cut to any desired lengths on the job, by hand.

Up to 24' lengths




Save Time Money—Labor



Perfect columns formed with labor-saving SONOTUBES. Forms can be left on or easily stripped off.

For one-time use 3" to 24" I. D.

*Write for delivered prices*

SONOCO PRODUCTS COMPANY
HARTSVILLE S. C. MYSTIC, CONN.
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sonoco 50th ANNIVERSARY

CUT THE COST OF COLD!

KIM Hotstart

REG. U. S. PAT. OFF.

Slashing the cost of cold weather—excessive engine wear and repairs, worn out batteries, lost warm-up time, fuel waste—is easy when you install KIM Hotstart engine pre-heaters on your equipment. With these fool-proof heaters plugged into the electrical circuit, the engine is warm at starting time, and you cut the cost of cold in these five important ways:

**Reduce engine wear and depreciation**
**Prolong life of batteries**
**Eliminate warm-up time**
**Cut fuel consumption**
**Avoid necessity of heated terminals**

Made in four sizes, there is a model for any gasoline or diesel engine—on trucks, tractors, automobiles or stationary engines. Sold and installed by International Harvester and Mack Truck dealers, and by leading automotive suppliers. See them for detailed information, or fill in and mail the coupon.

**KIM Hotstart • ENGINE PRE-HEATER**

KIM Hotstart Manufacturing Co.
West 917 Broadway, Spokane 11, Washington
Please send literature, prices and name of local dealer

Name_____

Address_____

City_____ Zone____ State_____

Make and model of equipment_____

# Liberal Use of Salt Keeps Roads Ice-Free

## Snows Were Light in Maine Last Winter, but Highway Maintenance Forces Still Contended with Ice

✦ THE State of Maine, like the other Atlantic coast states, enjoyed a mild winter last year. But although the snowfall was the lightest experienced in years, the Maine State Highway Commission maintenance forces still had to contend with the problem of ice control on the state's far-flung road system. This system is spread out over 33,215 square miles of area, much of which is heavily wooded. The Highway Commission alone is responsible for plowing snow and controlling ice on 2,875 miles of its principal highways. It also participates in winter maintenance on 5,704 miles of state-aid and 6,185 miles of town roads.

In this latter category of secondary highways, the towns handle the necessary plowing while the State supervises the work and also pays for part of the cost. The costs are set in this manner. In towns that exceed $200,000 in assessed valuation, the State pays half the cost of winter maintenance up to a rate of $50 per mile per year. In towns with a valuation of $200,000 and under, the towns themselves pay for the plowing up to $35 per mile per year; the State pays for any charges in excess of that rate. For the rest of the year, these state-aid roads are maintained by the State.

### Open Winter

Last year's light snowfalls were removed from the highways with neatness and dispatch by straight-blade plows, for the most part, mounted on light, fast-moving 2-ton trucks. After the paved areas were cleared, heavier 6 to 8-ton trucks equipped with heavy-duty V-plows set back the snow from the shoulders. A Snogo rotary plow was also available to toss the snow still farther back into the ditches. A light snow, however, can produce as icy a pavement condition as a heavy fall, for naturally the plows cannot scrape that last fraction of an inch of snow from the highways. And that last layer of snow quickly hardens into a slippery sheet of ice that is even more of a driving hazard than a snow-covered road.

To cope with this condition, the State has gone in more and more for the use of rock salt. In 1945-46 about 3,000 tons of salt were used for ice control in winter maintenance. This figure has gradually increased until last year 10,000 tons of salt were spread on the roads. The salt is applied immediately after a highway is plowed, at an average rate of 350 pounds per mile. It is distributed by salt spreaders hooked to the rear of light trucks which run down the center of the pavement. The brine that soon results then works its way to the edges of the surfacing. Almost at once, however, a bare spot appears along the crown of the road and affords traction for at least the wheels on one side of a passing vehicle.

The salt spreaders consist of a hopper at the top into which the salt is shoveled; from the hopper the salt drops down through a pipe to the spreading board from which it is scattered out on the pavement. Stockpiles of rock salt are spotted throughout the state at locations where past experience has shown them to be most needed. In addition to the use of sodium chloride, the State last year also spread on icy roads some 80,000 cubic yards of sand to impart to the pavement an abrasive non-skid surface. The use of abrasives has declined over the past few years as salt has come into increased favor.

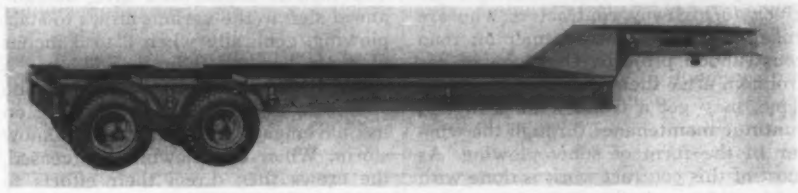
### Winter Contracts

On its own highway system the State has placed around 800 miles under contract for winter maintenance, while the remainder of the mileage is handled by state-owned or rented equipment. Contracts run for six months, from the beginning of November to the end of April. The individual contracts are small, averaging 20 to 25 miles for a section, and the person or firm receiving such a winter maintenance contract has to assure the Highway Commission that proper and adequate equipment will be provided to do the job.

*(Concluded on next page)*


**SOLVE YOUR HAULING PROBLEMS WITH A "TRANSPORT TRAILER"**

*Capacities through 75 Ton—Semi and Full Trailers*



CARGO CARRIER MODEL GPX (Semi) with Tandem Axles

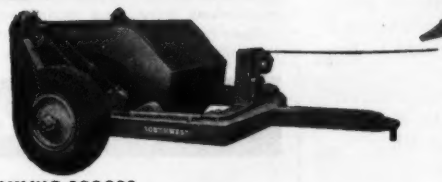
PATENTED TANDEM AXLE ASSEMBLY—Featuring unusual lengthwise and sidewise wheel accommodation to irregularities in the road. Use of full width tubular, forged, heat treated axles with CAMBER.

FRAME—Constructed of beam sections throughout, electric welded. A ruggedly strong and efficient unit with minimum weight.

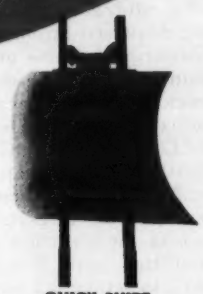
TRANSPORT TRAILERS, INC.

TRANSPORTATION ENGINEERING A SPECIALTY

CEDAR RAPIDS, IOWA, U.S.A.



HAULING SCOOPS



QUICK SHIFT RIPPERS

DUMP BODIES

Southwest's complete, standardized line affords construction men an opportunity to fill their needs from one dependable source. From start to finish, no matter whether Allis-Chalmers, Caterpillar, International or Cletrac tractors are used, an economical Southwest unit is available to bring you increased profits.

In addition to the standard line, special Southwest Dump Wagons, Tampers, Heavy Duty Compaction Units, etc., are giving outstanding performance on out-of-the-ordinary jobs all over the country . . . Why not let Southwest help solve YOUR problems?

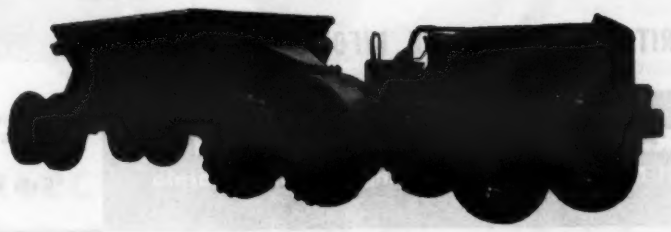
FOUR WHEEL SCRAPERS

CONSTRUCTION MACHINERY DIVISION

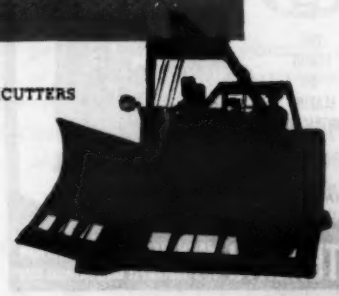
Southwest Welding & Manufacturing Company

ALHAMBRA, CALIFORNIA

BOTTOM DUMP WAGONS



BRUSHCUTTERS



## Liberal Use of Salt Keeps Roads Ice-Free

(*Continued from preceding page*)

Many of these winter contracts are given to highway contractors who are engaged through the summer on road construction projects. Or highway patrolmen, after their summer chores are done, may get a truck with plow and continue maintenance through the winter in the form of snow plowing. As most of this contract work is done with light equipment, the State is ever on the alert to rush in heavy trucks and larger plows if the need arises. These contracts are generally renewed from year to year when the contractor performs his work satisfactorily. If not, the section concerned is readvertised, and new bids are taken before the start of the next plowing season.

The prices vary considerably on these contracts because of the different conditions encountered throughout the state. Difficulty was always experienced in obtaining contractors to plow in Aroostook County, the far-northern potato-growing section of Maine. In that region a combination of rolling land and constant winds of high velocity results in continual drifting, and the same piece of road often must be plowed time and time again. Snow fences are a help here, of course, but their efficacy is limited.

### Highway Garages

The principal garage of the Highway Commission is located in Augusta, the state capital, in south-central Maine. The State also has two other good-size garages—one at Scarboro along the southern coast line, and one in far-northern Caribou in Aroostook County. Repairs are carried out in all three places, with the major work being handled at the Augusta shop.

In addition, the State also has several heated garages which are used primarily for storage purposes. These are widely dispersed throughout the length and breadth of Maine at the following locations: Ellsworth, county seat of Hancock County; Jackman, up near the border of Quebec; Wiscasset, county seat of Lincoln County; Gray, just north of Portland; Pejepscot; Kennebunk; Cape Neddick; Northport; and Fort Kent. As a rule three trucks are kept in each of these smaller garages. They are outfitted with V-type plows and can go into action at a moment's notice.

During the war and for some time afterwards, the State was unable to purchase snow-fighting equipment in the shape of trucks and plows. Consequently, during that period more plowing was done under contract than at the present. This contract mileage was reduced from 1,435 in 1945-1946 to 800 miles last year as the Commission gradually built up its winter maintenance forces, both equipment and men.

### Personnel

For greater flexibility in snow removal and ice control, the state is divided into 40 districts which are headed by supervisors who look after all plowing whether it is done by state, town, or contractor crews. Four division supervisors in turn break up these districts into four groups, and exercise general supervision over their activities. The division supervisors report to the Superintendent of Maintenance. The district supervisors give the go-ahead sign to the various crews to start plowing, generally when 2 to 3 inches of snow has fallen or drifted over a road. By such prompt action Maine strives to maintain two-way traffic on its pavements even during a snow storm. When the snowfall has ceased, the crews then direct their efforts to clearing the snow back off the shoulders.

The Maine State Highway Commission is headed by Lucius D. Barrows, Chief Engineer. John B. Church is Superintendent of Maintenance.

## Report on Belt Conveyors

Two reports on Transall long-distance belt-conveyor systems are offered by Transall, Inc., 109 N. 11th St., Birmingham 4, Ala. The first includes photographs, features and specifications on Transall idlers which, as separate units, are adaptable to all types of belt conveying, but are particularly designed for the Transall conveyor, as a complete assembly.

The second is a new 4-page folder with engineering details and price lists of the Transall line of standard idlers. These idlers are intended for use in a complete Transall conveyor system or in any type of belt conveyor system for moving of bulk materials.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 81.

## Heavy-Duty Wheels

Information on the company's line of wheels is now being issued in the form of folders and catalogs by The Dayton Steel Foundry Co., 1378 Miami Chapel Road, Dayton 1, Ohio. This literature covers all wheels now being manufactured for automotive, truck, and other heavy-duty equipment, and includes the Dayton fifth wheel for trailer coupling. Photographs and drawings, sectional and whole-part, illustrate each product. Specifications, parts lists, and suggestions for maintenance add to the usefulness of these catalogs.

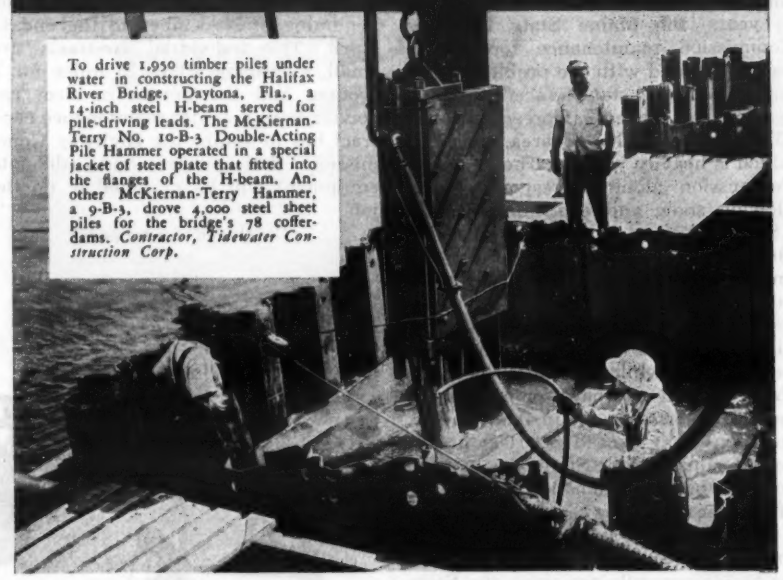
This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 79.

## Rigid-Frame Buildings

A new 8-page illustrated catalog describing the Rigidsteel design principle for economical building construction is offered by McCloskey Co. of Pittsburgh, 3400 Liberty Ave., Pittsburgh 1, Pa. Rigidsteel design permits construction without a network of trusses. Special applications for industrial, municipal, or commercial buildings, either conventional or eccentric in design, are discussed.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 76.


DEPENDABLE POWER INGENIOUSLY HANDLED



To drive 1,950 timber piles under water in constructing the Halifax River Bridge, Daytona, Fla., a 14-inch steel H-beam served for pile-driving leads. The McKiernan-Terry No. 10-B-3 Double-Acting Pile Hammer operated in a special jacket of steel plate that fitted into the flanges of the H-beam. Another McKiernan-Terry Hammer, a 9-B-3, drove 4,000 steel sheet piles for the bridge's 78 cofferdams. *Contractor, Tidewater Construction Corp.*

Necessity mothered the invention of this novel pile-driving procedure, for here were conditions where conventional pile driver leads could not be used.

Past experience with McKiernan-Terry Hammers occasioned the selection of these hammers for the job.

Power, dependability and safety of operation, demonstrated for over fifty years on pile-driving projects of every description, all over the world, have made McKiernan-Terry Pile Hammers the No. 1 choice of leading contractors and engineers. They can always secure in the standard McKiernan-Terry line of ten double-acting hammers, five single-acting hammers and two double-acting pile extractors a hammer or extractor powered for any specific requirements.

FOR MORE INFORMATION

Write us, on your business letterhead, for late bulletins giving specifications and other data on McKiernan-Terry Hammers and Extractors.

McKIERNAN-TERRY CORPORATION Manufacturing Engineers 19 PARK ROW, NEW YORK 7, N.Y.

McKIERNAN-TERRY FACILITIES. Coal and ore bridges, bulk material unloaders, bridge operating mechanisms, hoists and marine equipment are among the many other important products of McKiernan-Terry engineering and manufacturing skill, performing important service to industry, the railroads and our government. MK-369 A

McKiernan-Terry PILE HAMMERS AND EXTRACTORS

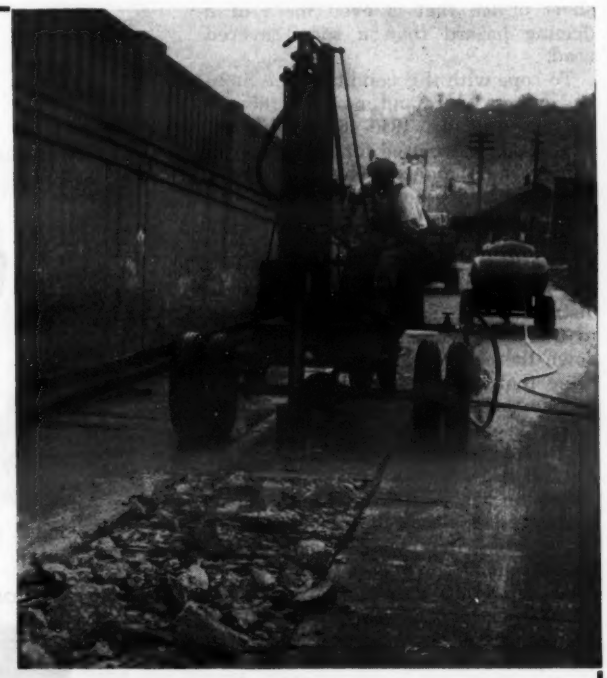
JUNIOR MODEL "M"

BREAKS 9" REINFORCED CONCRETE FOR 4½¢ PER SQUARE FOOT

Powered by a 210 CFM Compressor and operated by *one man*, the Junior Model "M" reduces the cost of breaking, saves time and makes money for the contractor.

WRITE FOR COMPLETE INFORMATION

R.P.B. CORPORATION
2751 East 11th Street · Los Angeles 23, California



Breaking 9" Reinforced Concrete* on a recent job in Cincinnati

*Cuts 5-foot width in one standing

By turning this pressure handle attached to his portable drill, the operator can control the drilling pressure and work with ease in about any position.

## Easier Operation For Portable Drills

A new pressure handle for use with portable electric and pneumatic drills is now manufactured by the Pressure Handle Co., N. State St., Wilkes-Barre, Pa. When it is attached to a drill, the operator can control the drilling pressure of the tool by simply turning the handle.

One end of a feed chain is fastened to the work, the other placed over the chain sprocket on the handle. When the handle is twisted, the force is transmitted by a worm gear to the sprocket which rotates and creates a pulling force on the chain. The company says that with the pressure handle an operator can drill with ease and safety in just about any position.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 62.

## Aluminum Insulation

A new insulation material for buildings is now being produced by Protective Papers, Inc., Dept. F, Union, Ill. It consists of a solid sheet of pure aluminum foil laminated to Leatherback all-purpose building paper. The unique feature of Leatherback Reflective Storm Blanket is the thin aluminum reflective surface.

This insulation is supplied in two types, plain and reinforced. The latter contains a high-strength web of spunglass fibers imbedded in the laminating agent between the aluminum-foil layer and the asphalt-impregnated paper.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 38.

## Flexible-Chain Couplings

A new 16-page catalog on flexible-chain couplings is now offered by Morse Chain Co., 7601 Central, Detroit 8, Mich. Subjects covered in Catalog C 45-49 are: roller-chain stock couplings; silent-chain stock couplings; heavy-duty made-to-order silent-chain couplings; and steel and plastic covers for the two stock couplings. Complete information is given on dimensions, horsepower ratings, and stock and maximum bores.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 60.

## New Welding Service

The United States Testing Co., Inc., has recently announced the expansion of its services in the control of welding operations to include the qualification of welders for welding contractors and steel fabricators. This work is being carried out in the company's plant at 1415 Park Ave., Hoboken, N. J.

The new service permits an employer to send a prospective welder employee to the United States Testing Co. plant. Here the qualification tests are made and the weldments tested in a continuous operation. Certificates are issued to the men who qualify. The complete operation covers 24 to 48 hours. All equipment and facilities are supplied except personal clothing.

Observation of such operations by state, municipal, and special-code agencies is freely permitted.

## Terracing-Ditching Blade

A circular on the Servis lift-type terracing and ditching blade is offered by the Servis Equipment Co., Dallas 1, Texas. This sturdy multi-purpose implement is for use on the Ford-Ferguson 3-point suspension-lift-type tractors. It is available in a heavy-duty size for Farmall C, as well as H, and M and other large-size wheel tractors. The bulletin fully describes the blade and its applications.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 48.

## Heaviest Tandem Roller

A catalog sheet on the VT48, the largest self-propelled tandem roller produced in the world, is available from Buffalo-Springfield, Springfield, Ohio. The roller has a base metal weight of 15 tons and can be ballasted up to 21 tons.

The catalog sheet explains that the roller transmission provides a continuous range of speeds from 1 to 5 mph with ample horsepower at all speeds to meet normal operating conditions. Hydraulic steering, side air intake, a simplified clutch mechanism, and a sturdy roller frame are featured in the circular. Brief specifications of the VT48 are also given.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 139.


**BRILLIANT PERFORMANCE EVERY TRIP OUT**

ALL TYPES AND SIZES

*is Assured by*

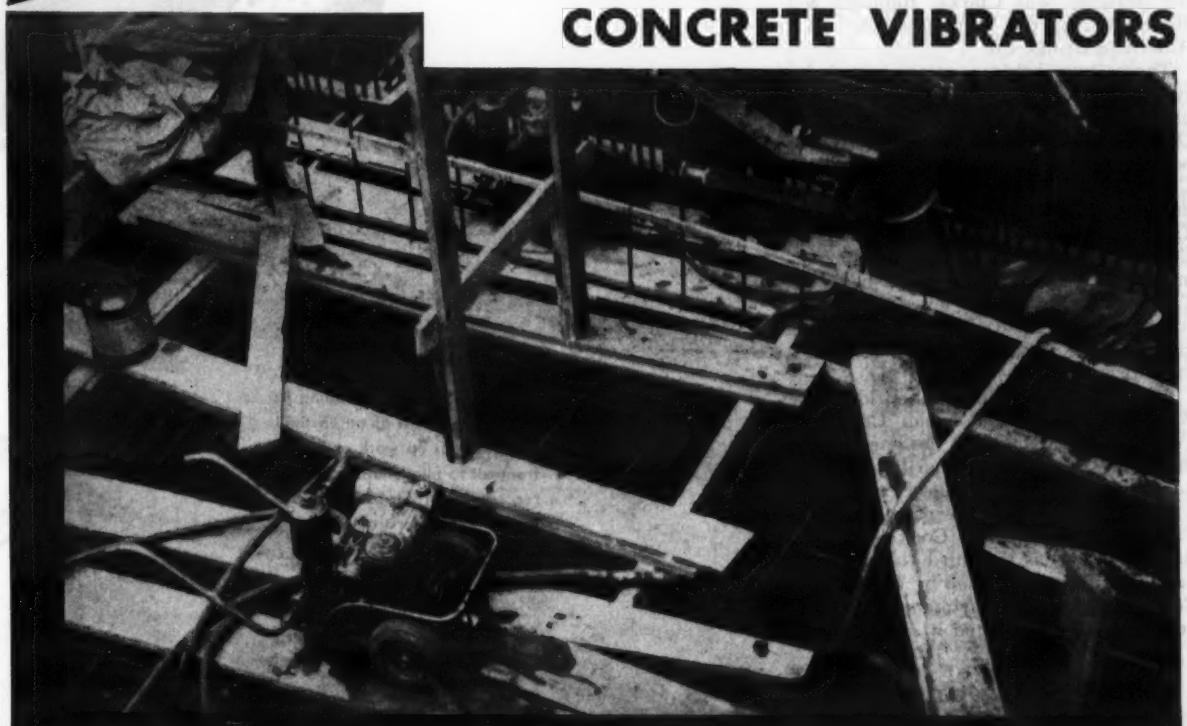
**DAVENPORT-FRINK SNO-PLOWS**

No matter what the snow or ice conditions, you obtain FASTER ● SAFER ● CLEANER snow removal with the lighter, yet stronger, DAVENPORT-FRINK SNO-PLOWS. Available in "V" and Straight Blade types for all sizes of trucks, tractors, road patrols and locomotives. Once you see them at work, you know why they are engineer-preferred throughout the snow belt.

**DAVENPORT BESLER CORPORATION** Dept. A DAVENPORT, IOWA

Made In Eastern U.S.A. by CARL H. FRINK 1000 Islands, CLAYTON, NEW YORK

*HERE IT IS!* **THE LAST WORD IN GAS-ENGINE–POWERED CONCRETE VIBRATORS**



**THE JACKSON HYDRAULIC**

*FOR THOSE WHO WANT THE BEST*

It's, by long odds, the most convenient, reliable and efficient concrete vibrator on the market. Note these outstanding superiorities:

**50' REACH MAKES THE HARD-TO-GET-TO PLACES EASILY ACCESSIBLE** . . . makes frequent changes of vibrator location unnecessary . . . increases the productive time of the machine and speeds up the progress of the job.

**7 H.P. ENGINE** . . . more than adequate power to thoroughly insure continuous, uninterrupted operation under all conditions . . . 4,000 to 7,000 VPM, instantly variable to suit conditions . . . 2¾" vibrator head with amplitude and frequency carefully balanced to give rapid, uniform placement of concrete without segregation or water separation.

**NO DAILY MAINTENANCE** . . . all vibrator parts operate in stream of oil *under pressure*.

See this finest of all general construction vibrators at your Jackson distributors or write for complete description. There's nothing that approaches it!

**OTHER MONEY-MAKING VIBRATORY EQUIPMENT:** Write for your free copy of the Jackson "POCKET GUIDE" to the ideal equipment for every type of concrete placement.

**ELECTRIC TAMPER & EQUIPMENT CO.**

**LUDINGTON, MICHIGAN**

At left is a winner in the AISC 1948 contest to determine America's most beautiful steel bridges—the Airport Apron Overpass on Van Wyck Expressway at the New York International Airport. At right, the 159th Street Overpass on the Calumet Superhighway, Cook County, Ill.—an "honorable mention" in the contest.

## Prize 1948 Bridges Receive AISC Awards

Two bridges have received awards in the annual contest conducted by the American Institute of Steel Construction to determine America's most beautiful steel bridges. Some 51 bridges opened to traffic in 1948 entered the competition.

The winner in Class I, for bridges with spans of 400 feet or more, is the Watanga River Bridge on Tennessee State Highway 67 in Carter County. The bridge is owned by the State of Tennessee; it was designed by the Tennessee Valley Authority; and it was fabricated by the Nashville Bridge Co.

Winner in Class III, for bridges with spans under 400 feet, costing less than $500,000, is the Airport Apron Overpass on the Van Wyck Expressway at the New York International Airport. The owner is the City of New York; the designer was Clarke, Rapuano & Holleran; and the fabricator was the American Bridge Co.

These two bridges were awarded stainless-steel plaques. Three other bridges received honorable mention. One is the Raymond E. Baldwin Bridge between Old Lyme and Old Saybrook, Conn., (Class II for bridges with spans under 400 feet, costing over $500,000). The Division of Bridges and Structures, Connecticut State Highway Department, designed it. Howard, Needles, Tammen & Bergendoff acted as consulting engineers to the Bridge Commission. The American Bridge Co. was the fabricator.

Another is the Roan Creek Bridge at Watanga Reservoir, Johnson County, Tenn., (Class III). The designer was the Tennessee Valley Authority and the fabricator was the Nashville Bridge Co.

The 159th Street Overpass on the Calumet Superhighway, Cook County, Ill., (Class III) is the third "honorable mention". It was designed by The Cook County Highway Department; Bethlehem Steel Co. fabricated it.

## Melts Snow and Ice

Melt, a new chemical for melting snow and thawing ice, is announced by The Chem Industrial Co., 1114 Hippodrome Bldg., Cleveland 14, Ohio. Produced in the form of minute pellets, it is said to be 99 per cent active. Thawing capacity of 1 pound is claimed to be equivalent to 12 pounds of salt. Melt is applied by sprinkling liberally over ice or snow surfaces. If used at the start of a snow or sleet storm, it is said to melt subsequent snowfall.

Melt is recommended by the company for use on roads, driveways, sidewalks, parking lots, loading platforms, steps, etc. It also will thaw frozen gutters, pipes, sewers, and railway switches. A handful under rear car wheels is said to provide traction and stop wheel spinning. There is no messy residue. The chemical is available in 25, 100, and 200-pound fiber drums. It is also offered in ton lots, packed in 100-pound moisture-proof paper bags.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 5.

## Shovel-Crane Catalogs

Two new catalogs have just been released by the Link-Belt Speeder Corp., 1201 Sixth St., Cedar Rapids, Iowa. These bulletins, 16 pages each, describe two of the company's line of shovel-cranes. Catalog No. 2356 presents the LS-51, a ½-cubic-yard earth excavator, and No. 2312 treats the Link-Belt Speeder LS-71, a ¾-cubic-yard machine.

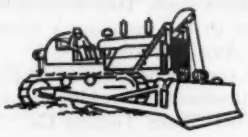
Many photographs and a concise text point out the features of these units when used in shovel, crane, dragline, or trench-hoe service. Also included are charts and drawings showing the general operating dimensions, capacities, and brief specifications for each machine.

All-welded lower frame, independent chain crowd, independent boom hoist, and other design features are highlighted in these booklets.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 92 for the ½-cubic-yard model and No. 93 for the ¾-cubic-yard machine.

This TD-24, shown spreading its load on the crest of an earthfill dam, speeds up work cycles from cut to fill. It turns in new records for profitable payloads. No other crawler tractor can match it in work capacity.

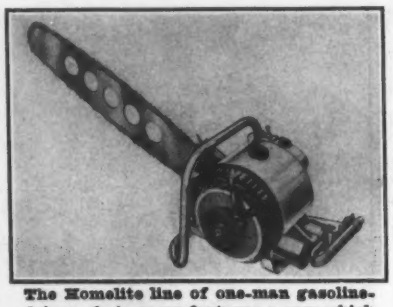
CRAWLER TRACTORS • WHEEL TRACTORS • DIESEL ENGINES • POWER UNITS



## Gasoline Chain Saws

A line of one-man gasoline-driven chain saws—including a saw which weighs 33 pounds complete—is announced by the Homelite Corp., 71 Riverdale Ave., Port Chester, N. Y. A 2-cycle air-cooled single-cylinder gasoline engine powers these saws. Die-cast magnesium and aluminum alloys are used for all major castings in both the engine and saw. Compact design, with cylinder, magneto, and drive housing mounting directly on the crankcase, keeps the engine to a minimum size. Ball and roller bearings are used throughout the engine and saw. The narrow kerf and simple design are said to cause less drag and speed up cutting.

The complete line of Homelite gasoline-engine chain saws includes straight-blade saws in 14, 20, 27, and 30-inch sizes, plus a "non-binding" bow saw. Saws weigh from 33 to 42 pounds.



The Homelite line of one-man gasoline-driven chain saws features a saw which weighs 33 pounds complete.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 49.

## Scotch Marine Boilers

A 28-page catalog on scotch marine portable boilers for firing with oil, gas, or coal has been issued by The James Leffel & Co., Shiery and East Sts., Springfield, Ohio. These boilers, ranging in capacities from 6 up to 250 hp, are constructed to comply with the ASME Boiler Code. Specifications, construction details, features, and test data are included in the booklet. Cross-sectional drawings supplement photographs illustrating the Leffel designs.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 78.

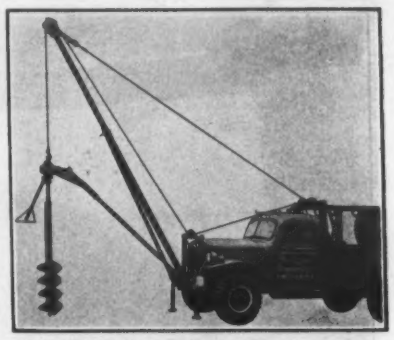
For a performance advantage that pays bigger profits, put the job-proved *champion* of all crawlers—the International TD-24—on your earthmoving jobs. No other crawler can match this giant diesel tractor in work capacity.

Exclusive features of the 140 drawbar horsepower TD-24 that make it champion include: Instant, positive all-weather starting; *an economical 180 horsepower diesel engine;* "Planet-power" steering which means greater drawbar pull on turns; *8 speeds forward and 8 in reverse with speeds to 7.8 m.p.h.;* Finger-tip high-low speed range control; *Shift-on-the-go, synchromesh transmission;* Separate reverse shift; and overall rugged construction that stands up under the punishment of the toughest work.

If you want the best in work performance and profit production, the International TD-24 is *your* tractor. See your International Industrial Power Distributor now for delivery arrangements.

INTERNATIONAL HARVESTER COMPANY
CHICAGO

INTERNATIONAL HARVESTER
INTERNATIONAL INDUSTRIAL POWER

The Tel-E-Lect winch drive box, derrick, and utility cabinets are designed for use on most truck models.

## Pole-Line Equipment

Three new pieces of pole-line equipment are being made by Tel-E-Lect Products, Inc., 10033 Minnetonka Blvd., Minneapolis, Minn. The new products—a winch drive box, a derrick, and utility cabinets—may be used on almost all truck models.

The winch drive box is operated by a single lever in the cab and allows the truck operator to raise, lower, or stop the winch. A single lever moved forward or backward during the time the power take-off is running does away with shifting the take-off from forward to reverse; it needs no truck clutch operation. As optional equipment, a selector is available for use with a double-drum winch. This unit, the company says, is able to power existing single or double winches and permit the operator to give undivided attention to the winch job.

The second product offered is a derrick for front or rear mounting on all makes of trucks. Both the T-type and the conventional middle leg A-frame may be obtained.

The steel bolt-on cabinets and material racks are designed for use on any flat-bed truck. Racks provide space for carrying the derrick, hand tools, pike poles, etc. Cabinets contain adjustable hooks for materials, trays with adjustable dividers, dome lights, and other features. Tarp coverings weatherproof the inside bed of the truck.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 89.

## Core-Drill Equipment

Core-drill supplies and equipment are covered in a new catalog on auxiliary core-drilling equipment recently issued by Joy Mfg. Co., Henry W. Oliver Bldg., Pittsburgh 22, Pa. This 36-page bulletin D-18 contains illustrations and specifications for a complete line of core barrels, bits, drill rods, and other equipment necessary for diamond core-drilling operations. When requesting bulletin, please state the type of core drill on which equipment will be used.

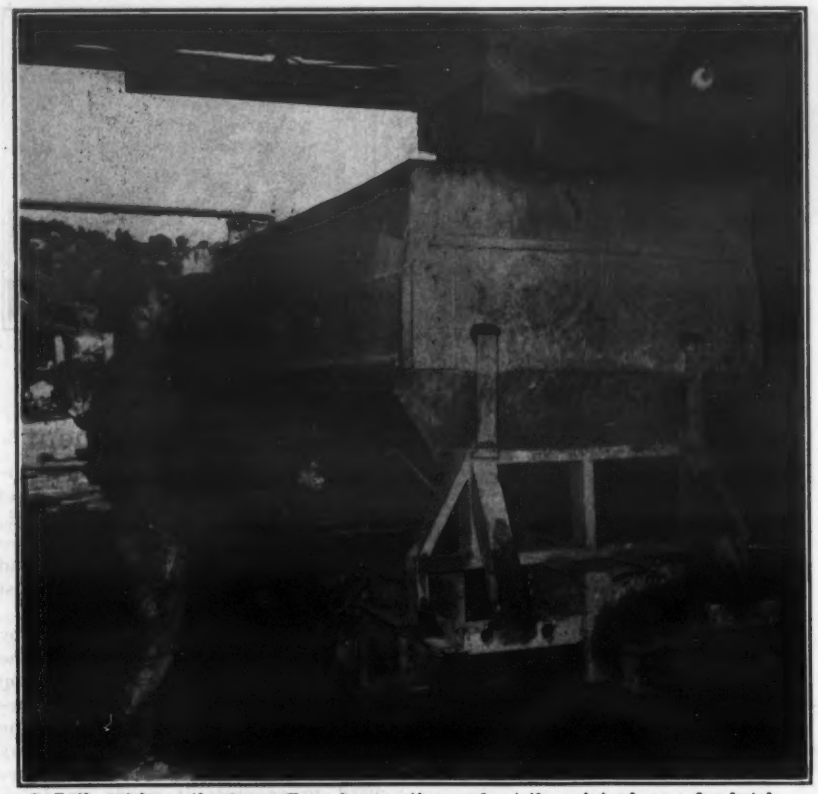
This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 14.

## Concrete-Curing Compound

A new folder describing Permite, a membrane concrete-curing compound, has recently been released by Aluminum Industries, Inc., 2438 Beekman St., Cincinnati 25, Ohio. Permite is applied by spraying, and forms an impervious film which seals in the mixing water for proper curing, the company says.

The catalog explains that the V-167 compound is recommended for all horizontal surfaces and for vertical surfaces below the ground. For vertical surfaces where non-discoloration is an important factor, Permite V-169 is available. The catalog includes specifications, features, and test data for both compounds manufactured by the company.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 100.



1. Let's cut in on the Aspen Tunnel concreting cycle at the point where a dry batch—1 cubic yard—pours from a Noble batching plant into the first compartment of a narrow-gage dump car for delivery to the tunnel ¼ mile away.

# Railroad Tunnel Is Lined With Concrete

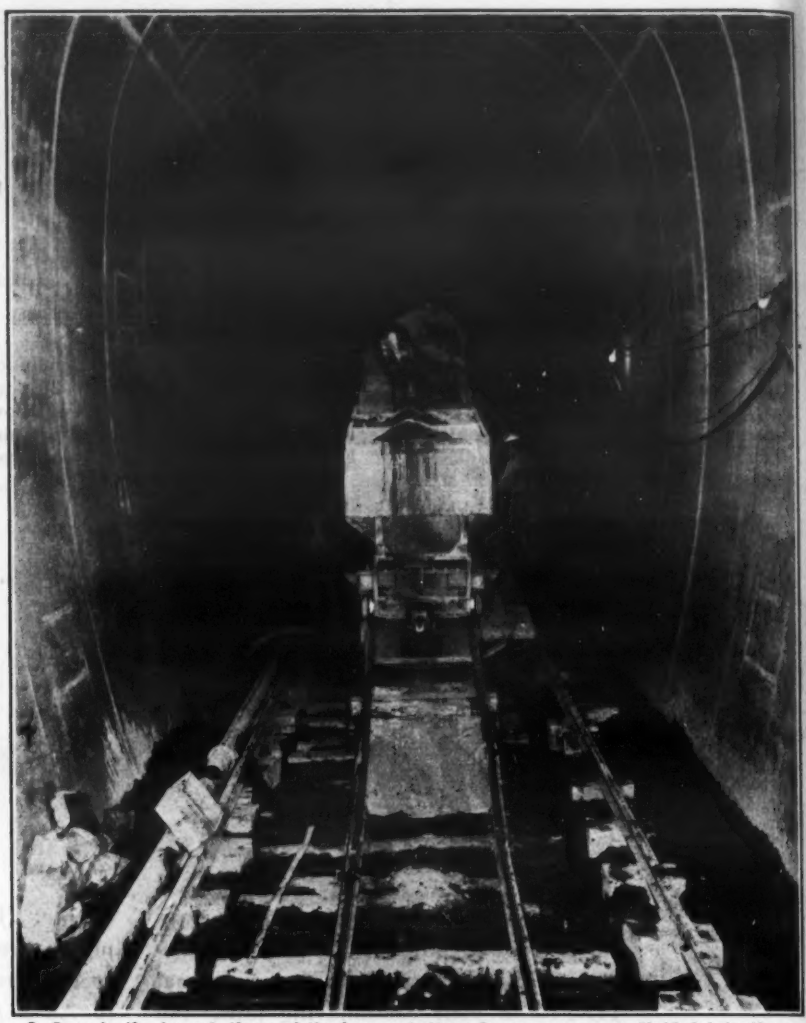
## Truck-Mounted Equipment Places 2-Foot Lining In Union Pacific's 6,700-Foot Aspen Tunnel

✦ ASPEN Tunnel in western Wyoming will probably be opened this year to trains of the Union Pacific Railroad. Drilling, blasting, and mucking the 6,700-foot tunnel took two years. Concrete-lining operations got under way this year and were expected to be completed in the autumn.

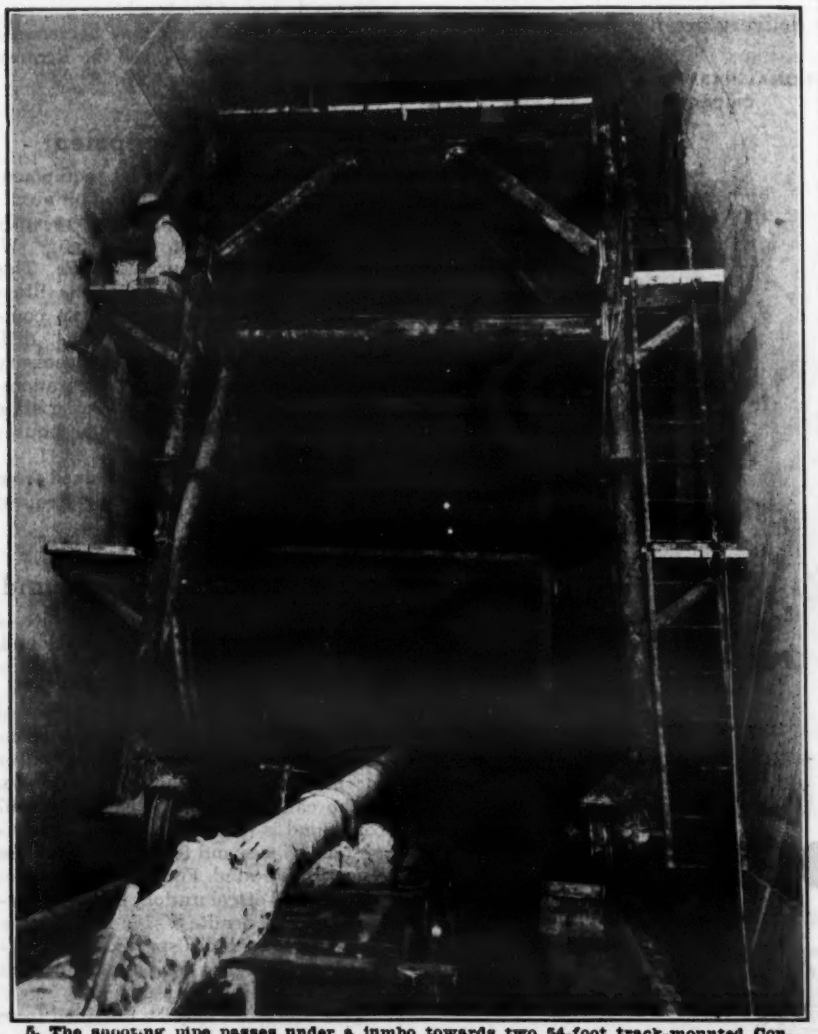
The new bore passes through a 7,660-foot mountain in the Uintah range at an elevation of 7,200 feet. It parallels the single-track 5,941-foot old Aspen Tunnel which was completed in 1901. It is the only stretch of single track along Union Pacific's 1,206-mile double-track main line between Omaha and Salt Lake City.

The horseshoe-shaped bore is 26 feet from floor to top inside and 18½ feet wide inside. The concrete lining is 2 feet thick and the invert is 2½ feet thick. By August 1 of this year, more than 3,800 feet of lining and 4,600 feet of invert had been poured—in other words, about 37,000 cubic yards out of an estimated total for the job of 60,000 cubic yards. Morrison-Knudsen Co.,

(*Concluded on next page*)

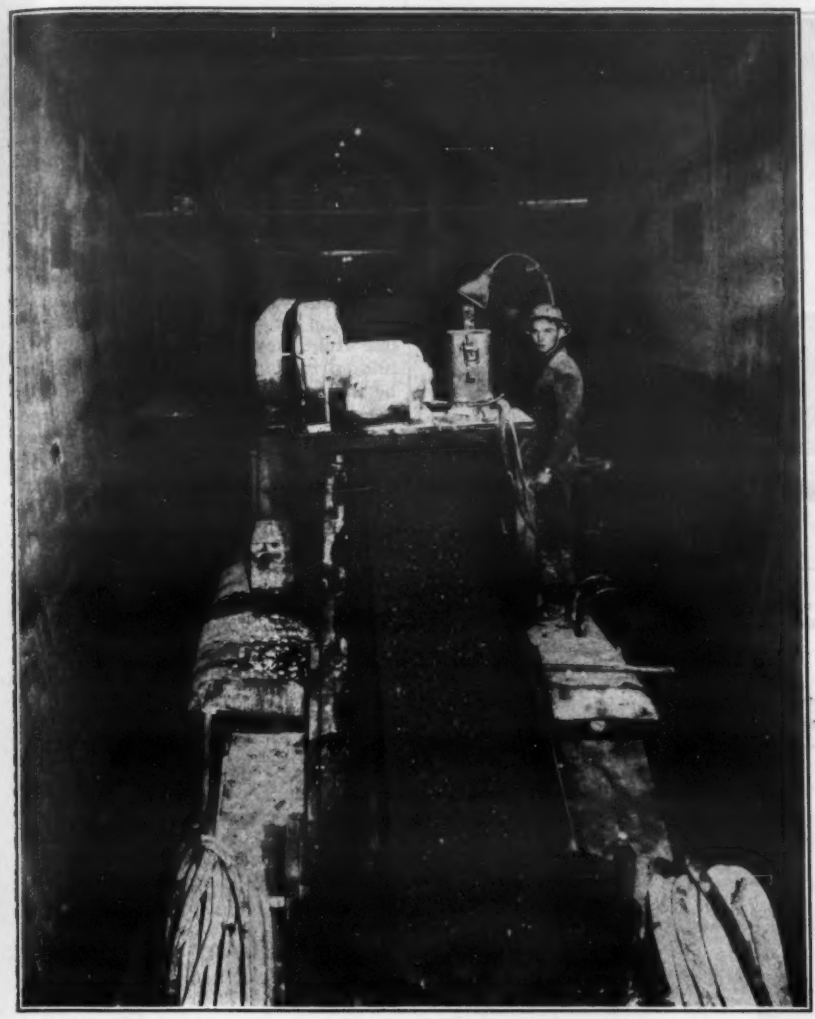


2. Once in the tunnel, three of the hopper-bottom dump cars—each divided into three compartments—are held on an incline while they unload their nine batches of dry aggregate and cement onto a 30-inch conveyor which carries the material to a mixer.



5. The shooting pipe passes under a jumbo towards two 54-foot track-mounted Consolidated Steel Corp. forms. From 300 to 400 cubic yards of concrete are used in each setting of a form and the pouring time for each setting ranges from 12 to 16 hours.

6. At the far end of the form, the shooting pipe turns upward to the tunnel top, then passes back again over the top of the form almost to the end of the form nearest the mixer and Pumpcrete—discharging concrete between the form and the tunnel sides.



3. As the dry batches travel the conveyor towards the mixer and forms, a word about their components. Each 3,892-pound batch consists of 540 pounds of cement, 1,283 of sand, 712 of pea gravel, 1,357 of coarse gravel, and 2⅞ pounds of Pozzolith.

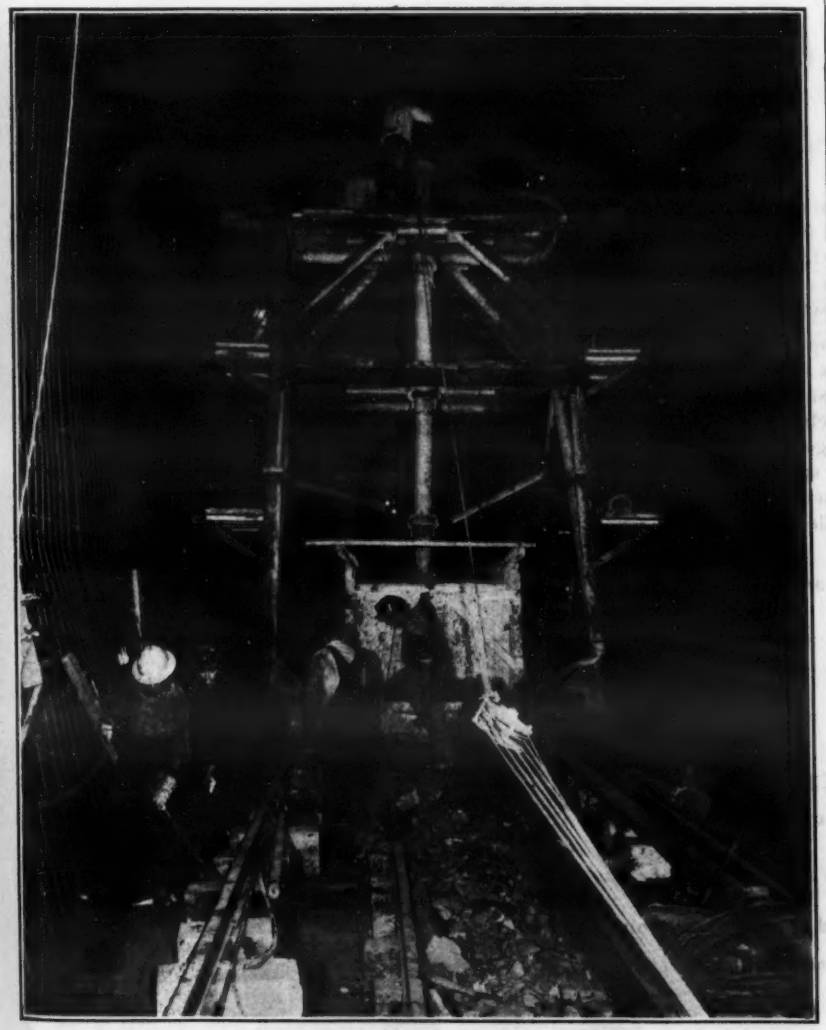
4. After mixing in a Ransome dual mixer, the concrete is sent to the forms by a Rex Pumpcrete, shown in the foreground, at the rate of 35 cubic yards per hour, through an 8-inch 180-foot shooting pipe, track-mounted like the mixer and Pumpcrete.

Inc., contractor, employed 330 men during the height of concreting work.

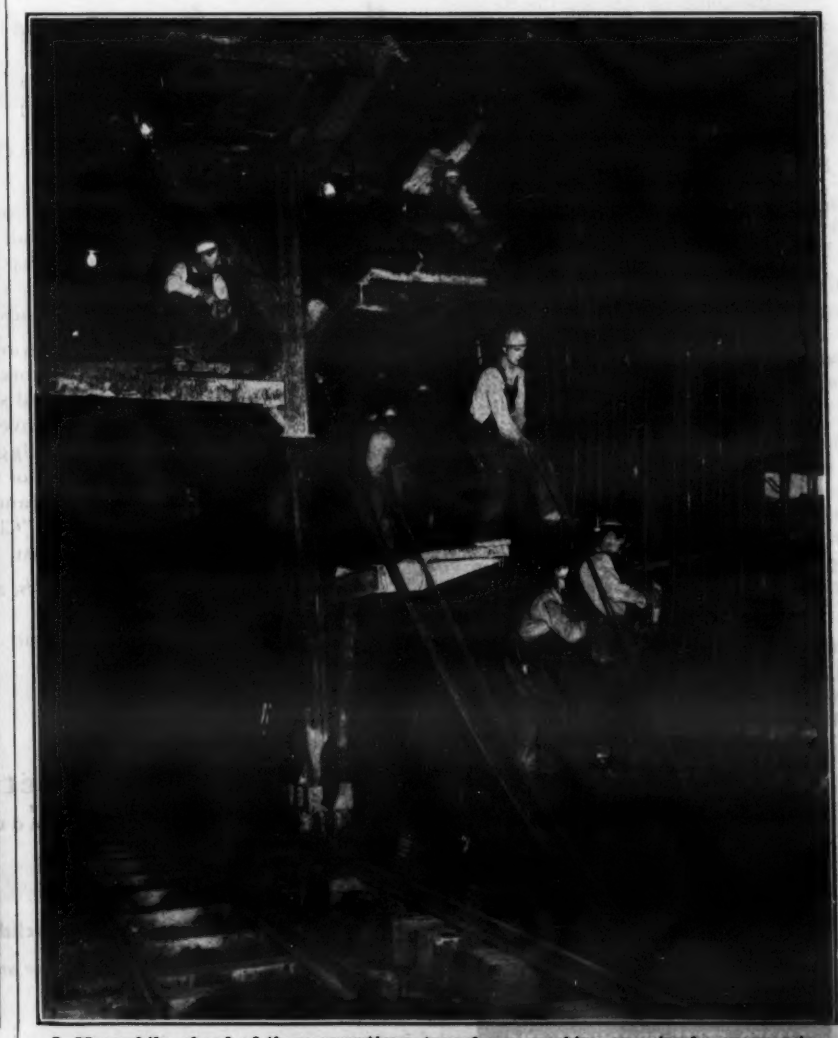
Aside from the narrow-gage railway system and several jumbos which have been employed in all phases of the $8,000,000 project, four major types of equipment figure in the concreting: a Noble batching plant, a rail-mounted Ransome concrete mixer, a rail-mounted Rex Pumpcrete, and two rail-mounted forms built by the Consolidated Steel Corp.

The 50-foot-high batching plant, located approximately ¼ mile from the east portal of the tunnel, was provided by the J. K. Wheeler Machinery Co. of Salt Lake City. It has a capacity of 350 tons of concrete aggregate and 2,500 barrels of cement. Underground conveyor belts carried sand and pea and coarse gravel to the plant from flanking surge piles.

The accompanying pictures pick up the story from here on—from the time dry batches leave the plant and travel to the mixer, until the concrete, via a Pumpcrete pipe, reaches the placement point.



7. On the other side of the jumbo which supports the vertical section of shooting pipe, a block and tackle tightens up to draw the concreting equipment a few feet forward. The dump-car incline, mixer, Pumpcrete, and pipe are moved as a unit.



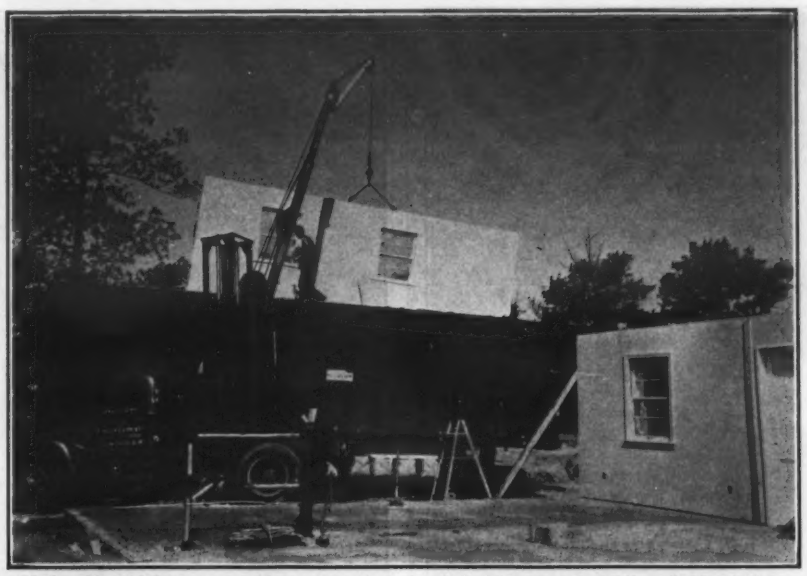
8. Meanwhile, ahead of these operations, tunnel men working on a jumbo weave reinforcing steel for the next section of pour. The concrete sets 15 to 24 hours before the form is retracted through a series of jacks and moved ahead.

## Crane Erects Homes

By using a truck-mounted Bucyrus-Erie Hydrocrane, Petroleum Equipment Co. of Milwaukee, Wis., reduced the erection time for prefabricated Page & Hill houses from 6 or 7 hours to 2½ hours.

The system which the crane replaced was a complicated one involving hitching, unhitching, hoisting and pulling. The panels of the prefabricated houses were unloaded from semi-trailers with a chain hoist mounted on a motor transport tractor. This meant unhitching the tractor from the semi-trailer, hoisting and pulling the sections off the trailer, then driving the tractor to the house foundation and setting the sections in place with the aid of the hoist and hand labor. When the tractor couldn't get close to the foundation because the ground was rough or sloping, more of the work had to be done by hand.

Now the Hydrocrane handles the entire job of lifting sections from the trailer to the foundation. And the contractor is finding it convenient to use the crane for additional tasks such as digging house connections and setting up oil tanks.



Hydraulic outriggers provide a firm base for this Hydrocrane as it swings sections of a prefabricated house off a semi-trailer and eases them into place on the foundation. Petroleum Equipment Co., of Milwaukee, Wis., handled the job.

## Anti-Freeze Product

Winterset, a new 100 per cent glycol-base permanent anti-freeze, is announced by the Stone Distributing Co., division of Stone Motor Co., Coshocton, Ohio. The new product is boil-proof, according to its manufacturer, and one filling will last the entire winter. Formulated especially to meet heavy-duty needs of construction-machinery cooling systems, it affords freezing protection far down into sub-zero ranges. Chemical inhibitors are designed to prevent rust and corrosion.

When used in accordance with instructions, Winterset is said not to clog cooling-system passages, or harm car finishes, or damage rubber hose. It is available in 1-gallon sealed cans and in 54-gallon drums.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 10.

## Salesman for Lacing Co.

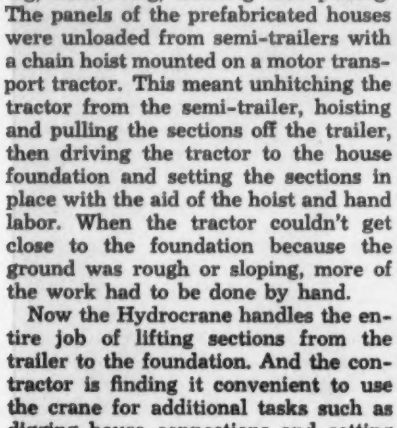
Fred O. Benson is now the Illinois sales representative for the Flexible Steel Lacing Co., Chicago, Ill. Mr. Benson's territory was formerly covered by Sam Baker who retired last year.

## Motor Generators

A new series of motor-generator sets has been announced recently by the Kato Engineering Co., 118 Maxfield Ave., Mankato, Minn. These sets are available in sizes up to 300-kw, from 15 to 400 cycles. Special radio filtering is available for many sizes. Katolight motor-generator sets are usually built to order and the company invites inquiries for all kinds of requirements.

Katolight generators are available for changing dc to ac, ac to dc, or from one frequency to another. Direct coupling drive is utilized where speeds can be the same. When changing from one frequency to another, it is usually necessary to use a V-belt drive. In these cases an adjustable V-belt pulley is installed on the motor. This permits adjusting generator speed and frequency to any predetermined condition of load.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 22.

INCREASE TRACTOR Power!

• Worn grouser shoes, retipped with BULLDOG TRACTOR GRIP-LUG provide deep-biting traction on any terrain . . utilize full engine power . . save time, fuel and often contracts! Write for complete information, or contact your equipment dealer for details.

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take the "worry" out of winter!

Get the jump on winter with efficient Oliver snow removal equipment.

Both Oliver "Cletrac" crawler tractors and Oliver Industrial wheel tractors and their full line of allied equipment can help you keep highways, streets and sidewalks clear of snow . . . keep traffic moving despite the heaviest snowfall.

And, an important cost-cutting advantage to you is the fact that these husky tractors are year-round units . . . snow plows and snow loaders in winter, earth-movers, loaders, shovels, pavement breakers, mowers, ditch diggers, etc., in other seasons. Why pay for a lot of specialized individual construction and maintenance equipment when Oliver and Oliver "Cletrac" tractors can do the job at far less cost.

If you already own Oliver Tractors, ask your Oliver Distributor about snow removal equipment designed for your tractors. If not, you'll find it pays to investigate the Oliver line today.

Cletrac
a product of
THE OLIVER CORPORATION
Industrial Division: 19300 Euclid Avenue, Cleveland 17, Ohio
A complete line of crawler and industrial wheel tractors

OLIVER Cletrac SALES SERVICE

"THE SIGN OF EXTRA SERVICE"

The McConnaughay asphalt-barrel heater also provides a heated built-in storage tank in capacities up to 2,000 gallons. The combination unit is mounted on pneumatic-tired wheels or skids for portability.

## Heater and Storage For Asphalt Barrels

A combination asphalt-barrel heater and storage tank mounted on pneumatic-tired wheels or skids is now offered by K. E. McConnaughay of Lafayette, Ind. Asphalt barrels are placed in the heater in an inverted vertical position, with bungs removed, on an open grid. As the asphalt heats and melts, it runs through the grid into the heated storage tank under the grid, where it is kept hot until used. This storage-tank preheating saves time usually consumed in heating the asphalt in the distributor, the manufacturer points out.

The barrel heaters were especially developed for jobs where it is difficult to heat drums, and secure the rapid and thorough removal of asphalt. They are made in capacities of 7, 12, and 24 barrels at one time, and the built-in storage tank can be had in capacities of 500, 1,000, and 2,000 gallons. The units feature rapid heating with no damage to barrels. The barrels can be re-used or sold.

Futher information may be secured from the company. Or use the Request Card at page 16. Circle No. 17.

## Resumes Production Of Concrete Placers

Production of pneumatic concrete placers is again under way at Worthington's Construction Equipment Division, Dunellen, N. J., after being suspended during the war years and the years immediately following. The Worthington-Ransome pneumatic concrete placer is designed to place concrete in subways, tunnels, isolated bridge piers, and wherever inaccessibility makes the ordinary methods impractical or expensive.

For full information write for Bulletin R-105C, Worthington Pump & Machinery Corp., Harrison, N. J. Or use the Request Card bound in at page 16. Circle No. 138.

## Scales Up to 50 Tons

A catalog on motor-truck scales, for weighing loads up to and including 50 tons, is available from the American Scale Co., 919 Baltimore Ave., Kansas City, Mo. These scales are of the pit type. The company also manufactures pitless scales in light and heavy duty models.

Illustrations and data on capacities and dimensions for all models are given in the folder. Also included are specifications on wheelbarrow scales.

This literature may be obtained from the company or by using the Request Card at page 16. Circle No. 61.

## Booklet on Transit Care

A small manual on transits is available from the Brunson Instrument Co., 1405 Walnut St., Kansas City 6, Mo. Designed to help users get the best service from Brunson transits, it gives instructions for their care, adjustment, and use. It is illustrated and written with the field man's problems in mind.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 19.

## Aluminum Couplers

A high-pressure 2-inch coupler of pressure-cast aluminum for use on air and water lines is made by Irrigation Equipment Co., Inc., 409 E. 8th Ave., Eugene, Oreg. Designed for a working pressure of 150 psi, these couplers are tested to 450 psi. They fit 2-inch OD steel or aluminum tubing, but adapters are available for iron-piped thread.

The Ireco couplers are lightweight and feature flexible, positive, quick-acting locking. The new flexible pressure seal ring and gasket are made of oil-resistant Neoprene. No special tools are needed for assembly; the coupler is bolted for permanent attachment to one end of the pipe. The 14-gage wall is made of high-strength heat-treated aluminum. Twenty-foot lengths of tubing with couplings attached, ready for use, may be obtained.

Ireco aluminum air couplers are designed for air and water lines.

Further information on these aluminum couplers may be secured from the company. Or use the Request Card at page 16. Circle No. 151.


GRIFFIN
WELLPOINT SYSTEMS
JETTING PUMPS
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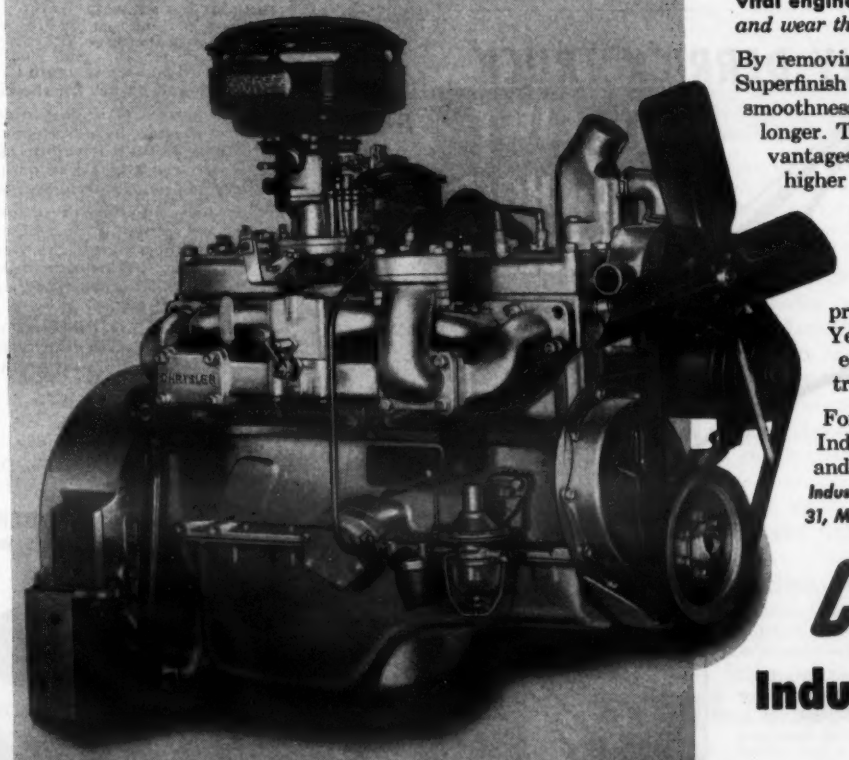
SO SMOOTH

*that a pencil of babbitt metal leaves no mark— though it clearly marks all other metal finishes.*

CHRYSLER SUPERFINISH



**. . . the exclusive Chrysler way of surface finishing vital engine parts,** *comes closer to eliminating friction and wear than any finishing method ever devised.*

By removing surface roughness left by machining, Superfinish produces almost unbelievable mirror smoothness. Superfinished parts fit closer and wear longer. That means greater utilization of the advantages to be found only in higher speeds and higher compression ratios.

Superfinishing is one of the big reasons why Chrysler Industrial Engines outperform, out-last and out-economize other similarly rated engines on practically every kind of job you can name. Yet, thanks to Chrysler mass production economies, you can buy a Chrysler Industrial Engine for less money.

For eye-opening details, see your Chrysler Industrial Engine Dealer, or write us. Parts and service quickly available everywhere.

*Industrial Engine Division, Chrysler Corporation, Detroit 31, Michigan*

CHRYSLER
Industrial Engines and Power Units

HORSEPOWER WITH A PEDIGREE

This is the new Bucyrus-Erie wheel-mounted crane-excavator, the 22-B, engineered along the lines of its counterpart, the crawler-mounted 22-B. Sterling Motor Co. built its mounting.

## Rubber-Tired Crane

A heavy-duty crane-excavator mounted on rubber has been announced by the Bucyrus-Erie Co., South Milwaukee, Wis. The new 22-B wheel-mounted excavator has been engineered along the lines of its counterpart, the crawler-mounted 22-B.

The 142-hp Bucyrus-Erie mounting is built by Sterling Motor Co. Wheelbase of the new mounting is 181 inches; the overall width is 8 feet. The frame is of alloy welded steel with bumper and outrigger brackets integrally welded. Two double box outriggers provide additional support on the job. Full-vision truck cab, air brakes, Timken-Detroit axles, optional hydraulic booster steering, and 12-speed transmission are other features of the mounting.

Removable inserts may be used to increase the standard 30-foot boom to an 80-foot boom in lifting crane service. For traveling, long booms are quickly folded with special equipment. Both hoist line and boom lowering are power-controlled to provide safe crane operation. Additional lifting crane safety features are the boom stops which prevent raising the boom beyond safe limits.

A full range of front-end equipment is available for the 22-B. It may be converted in the field for shovel, dragline, dragshovel, clamshell, or crane operation. In excavator service, the buckets and dippers are of ¾-yard capacity.

Main hoist, swing, boom hoist, crowd and retract machinery operate on anti-friction bearings. The transmission chain and all gears, except the swing rack and pinion, turn through enclosed oil baths; and all hoist, swing, crowd, and propel friction clutches are alike with interchangeable parts. Bands are reversible end for end to increase lining life.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 21.

## Questions and Answers About High-Speed Dozing

A pocket-size slide graph, which gives five questions and answers about the high-speed Tournadozer, is now being offered by R. G. LeTourneau, Inc., Peoria, Ill. The card indicator illustrates the operating features of the Tournadozer.

This slide-graph may be obtained from the company, or by using the Request Card at page 16. Circle No. 98.

## Aluminum-Design Handbook

"Aluminum Structural Design" is a handbook which has been prepared by the Technical Editorial Service of Reynolds Metals Co., 2500 S. Third St., Louisville 1, Ky. The data presented in this 116-page book enable the engineer familiar with mechanics of materials to design an original structure of aluminum, or to convert an existing structural design from some other material to aluminum.

Chemical and physical properties, design and fabricating considerations, specifications, and applications of aluminum structural members are treated in the text. All important data are tabulated and photographs illustrate applications.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 36.

## Troughed Belt Conveyor

A specifications sheet on the Model 608 24-inch troughed belt conveyor manufactured by The Fairfield Engineering Co., Marion, Ohio, describes all features and lists all dimensions of this conveyor. It indicates that electric-motor or gasoline-engine power equipment is optional; that lengths of 25, 30, or 35 feet are available; and that the conveyor may be used to load or unload sand, gravel, crushed stone, slag, etc. Illustrations of the equipment are included.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 119.

## Truck and Equipment Parts

A new 82-page catalog serves to mark the 31st anniversary of The Northwestern Auto Parts Co., 834 N. Seventh St., Minneapolis 11, Minn., domestic and export supplier for auto, truck, and military equipment and parts, both new and rebuilt.

Northwestern handles complete engine and assembly remanufacture and maintains stock piles of new engines, transmissions, differential carriers, and miscellaneous assemblies. The catalog lists the reserve of new replacement parts and accessories. A large section is devoted to truck parts for military vehicles. Parts numbers and prices are included for all items covered.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 107.


SPEED OPERATION for Snow Plows and Road Machinery with the . . . .

MONARCH New and Improved HY-LO-JACK

Fan Belt Driven

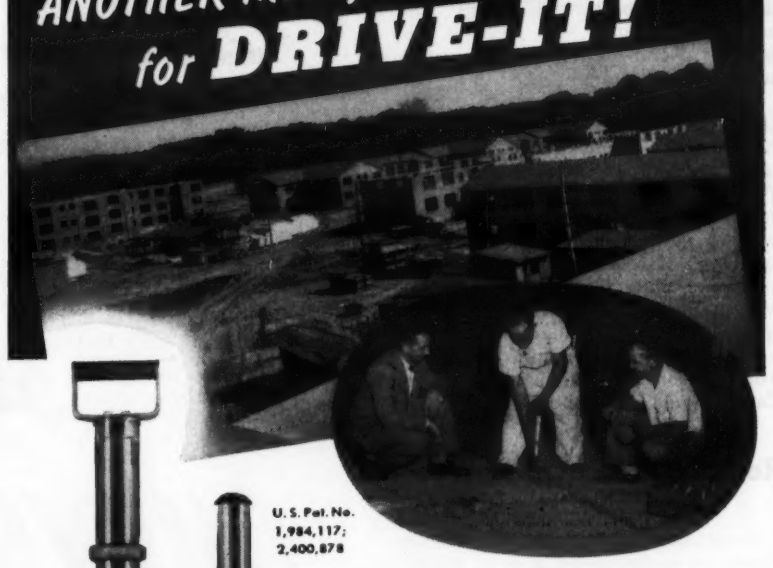
Power Hydraulic Control

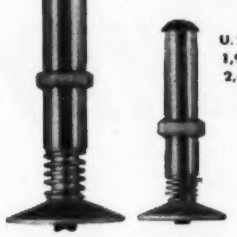
Lifts plows ten times faster than hand pump. Cab-controlled. Easy installation on new or existing equipment. Priced for the most conservative budget.

WRITE FOR CIRCULAR H-75

MONARCH ROAD MACHINERY COMPANY, 327-329 Front Ave., N. W., Grand Rapids 4, Michigan

ANOTHER Money-Saving TRIUMPH for DRIVE-IT!





U. S. Pat. No. 1,984,117; 2,400,878

Top photo shows the new $10,000,000 Kent Village housing project in Maryland now under construction. The giant project includes over 1,000 units.

Lower photo illustrates the DRIVE-IT '38 tool being used to anchor wooden sleepers, for partitions, to the concrete flooring.

Model 238 for heavy fastening

Model 222 for light fastening

75 PER CENT Saved at KENT!

DRIVE-IT does it again . . . solves a tough fastening problem and saves time and money for the contractor.

On the Kent Village project over 75,000 feet of 2" x 4" wooden partition sleepers have been anchored to concrete. A two-man crew "set" more than 25,000 drive-pins at the rate of over 800 "shots" per day. That's *some* record; and, to quote the contractor, it was done "*at a saving in cost of 75% over conventional methods!*"

You, too, can enjoy these amazing savings on common fastening jobs where steel or wood must be anchored to steel or concrete. Take a tip from Mr. Hubert Hendricks, General Superintendent on the Kent Village job who says: "*We are very pleased with the results of DRIVE-IT powder-powered tools and would gladly recommend them to anyone having similar anchoring problems.*"

Write *today* for the facts on DRIVE-IT—the new money-saving, safety engineered fastening system. We'll be happy to arrange a demonstration through your local DRIVE-IT distributor.

How DRIVE-IT Does It

DRIVE-IT uses a small powder charge to "drive" a hardened steel drive pin or stud into steel, concrete and similar tough materials. The drive pin imbeds itself, at high velocity, in the material. Once imbedded it will withstand hundreds of pounds of direct pull, and is highly resistant to vibration. No drilling or previous preparation is required when fastening the DRIVE-IT way.

Distributors Coast-to-Coast

*Canadian Distributor:* AMMO-POWER TOOL CO., LTD., Ft. of McLean Drive, Vancouver, B. C.

POWDER POWER TOOL CORPORATION

0705 S. W. Woods St. Portland 1, Oregon

DON'T DRILL IT . . . DRIVE-IT POWDER-POWER TOOL

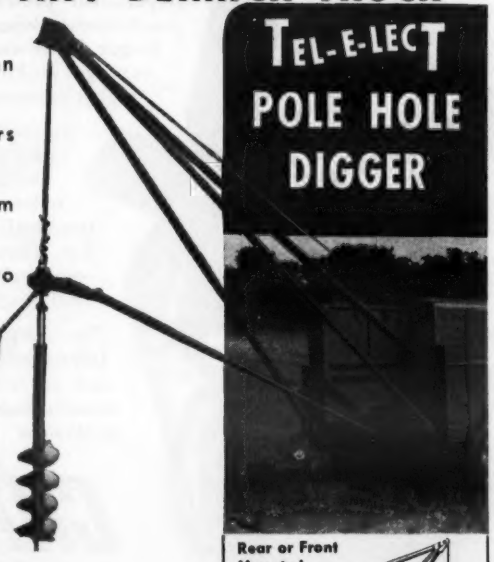
DRIVE-IT!

THE MODERN MIRACLE TOOL

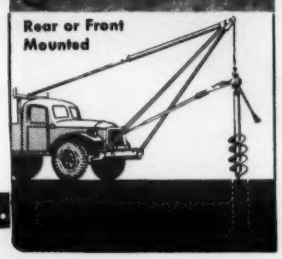
Operates ON ANY DERRICK TRUCK

TEL-E-LECT POLE HOLE DIGGER

- Adjustable for clean holes to 10 feet deep
- Interchangeable augers 8" to 20" diameter
- Drills a straight hole from any truck position
- Easy to use—easy to transport



With the Tel-E-Lect Digger, you can drill a hole for any purpose—*anywhere you can spot a truck derrick.* Used by contractors for drilling telephone and power poles . . . pier holes for buildings . . . guard rail post holes . . . many other uses. A single bolt attaches the digger to the truck and it works suspended from the derrick line. Powered by the truck motor through a power take-off shaft, the Tel-E-Lect is raised and lowered by the winch line. A low cost all-purpose digger. *Ask for circular.*



Rear or Front Mounted

TEL-E-LECT PRODUCTS, Inc.

10,833 Minnetonka Boulevard, Minneapolis 16, Minnesota

# Heavy Sub-Base On Airport Project

## 19 Inches of Limestone Used as Flexible Base Under Pavement Slabs on Airport Expansion

✦ DESIGN engineers in charge of expansion work at the Municipal Airport at Topeka, Kans., determined that from 17 to 19 inches of crushed limestone was necessary under some of the pavement slabs. The heavy base course has sufficient strength to stand the heavy wheel loads of large commercial airliners, and it has whipped a naturally unfavorable soil condition. The Topeka Municipal Airport is in a river bottom, and the soil is sandy silt.

Douglas Construction Co. of Topeka has the $743,000 contract with the City of Topeka and the Civil Aeronautics Administration. The new airport enlargement will bring present facilities up to date so that they are more in keeping with a city of 105,000 population. Work, which began last December 15, continued right through the winter and is expected to reach its conclusion by December 1, 1949.

The contract includes a general expansion, but very little new work as such. The main runways have been lengthened to 5,100 feet, and widened from 100 to 150 feet. The NW-SE runway has been widened. A general enlargement to 5,100 x 150 feet was the program for the N-S runway. No work was included under the contract for the present NE-SW runway. A new taxiway 500 x 50 feet was constructed, a small hangar area and operating area was paved, and a new access road built to the administration building.

The operating area, access road, taxiway, and hangar area were all paved with portland-cement concrete. The N-S runway, comprising a great portion of the flexible-base work, was paved with 2 inches of hot-mix asphaltic concrete. The contract included about 140,000 cubic yards of grading, 60,000 cubic yards of production and installation of crushed granular sub-base, pavement, and drains.

All over the vast geographical area from St. Joe to the Rockies, rain bedeviled contractors week after week during the spring of 1949. The Topeka airport venture was no exception. Ask any man from General Superintendent on through to the operators what the biggest headache has been, and he will answer, "the weather". The way he says it will not be quite that clean.

### Part of Contract Subbed

A large part of the contract was sublet to another firm. Clarkson Construction Co. of Kansas City received the go-ahead order for grading, and for the production and installation of crushed sub-base.

In addition to the weather, one of the features complicating the work was the fact that only one runway could be closed to flying at a time. So, when the grading subcontractor finished the earth work on the N-S runway, he had to move out. Until the base operations and surfacing were completed and this runway restored to service, work could not be started on the NW-SE runway.

Since the air terminal was already well established and marked, grading consisted mostly of shallow cuts and fills, with reasonable hauls around 1,500 feet. The material was alluvial river sand and silt, typical of the river bottoms in this part of the Great Plains. While it dug and moved easily, it resisted all efforts to compact it to the 90 and 95 per cent densities required under the CAA-participating specifications.

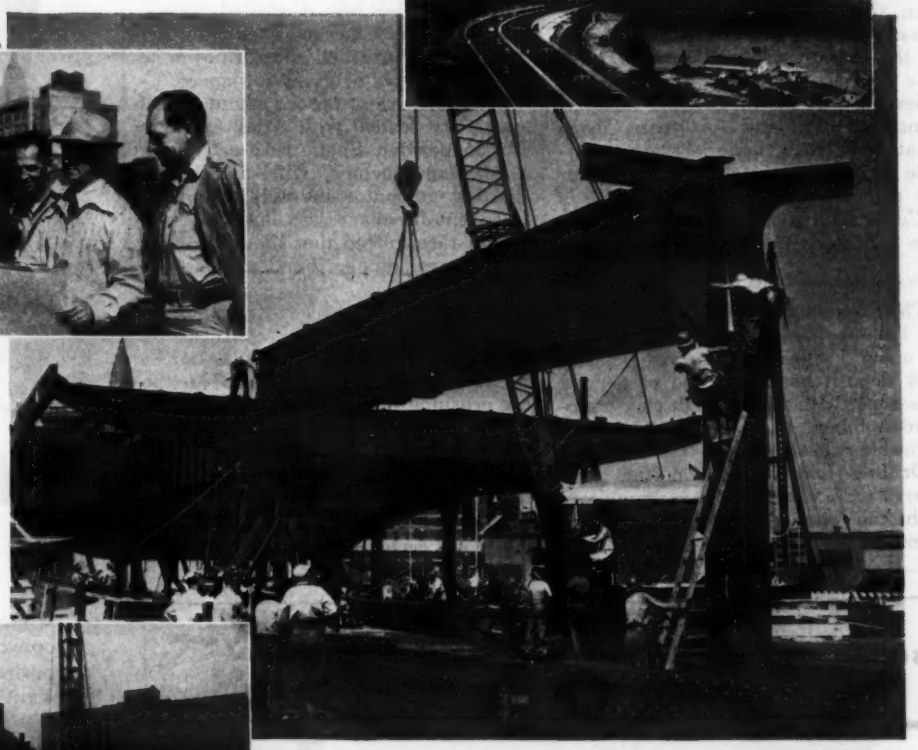
The excavating fleet consisted of three Caterpillar DW10's for grading; three Caterpillar No. 12 motor graders for spreading and blending; one D8 with a dozer blade for leveling; two sheepsfoot rollers; two Huber steel-wheel rollers for crushed sub-base placement; a Case rubber-tired tractor; a 3,000-gallon water tank on a Dart truck; and two Jaeger centrifugal water pumps for removing rain water.

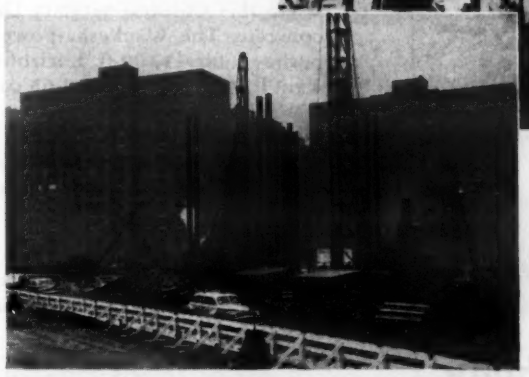
(*Continued on next page*)

*C. & E. M. Photo*
**On the Topeka airport job, Chicago Pneumatic and Cleveland wagon drills work with Timken steel and rock bits to get sub-base rock out for the Bucyrus-Erie 37-B shovel in the background. A 500-cfm CP compressor furnished power to the drills.**


# New Elevated Highway IN MANHATTAN

Looking over the day's work. Left to right: J. Kinney, superintendent, and J. Tiernan, vice-president, P. T. Cox Construction Co., Inc.; W. Lewis, assistant superintendent, E. Happ, assistant section engineer, J. Mancini, section engineer, and G. Tuscher, inspector, all for City of New York.





Cars roll on old highway as Bethlehem H-piles are driven to bed rock. Part of Stuyvesant Town and Peter Cooper Village in background.

Finished roadway starts to take shape as initial layer of concrete is poured over heavy concentration of Bethlehem Reinforcing Bars.

↑Easy does it! Bethlehem girder goes into place on north ramp. Heaviest girder on job weighed 90 tons. (At top) Air view, looking north, showing cars on completed roadway. Elevated portion of Franklin D. Roosevelt Drive is 2717 ft long. Skyscrapers of midtown New York visible in distance.

Construction of Stuyvesant Town and Peter Cooper Village, gigantic housing developments adjacent to the East River in downtown Manhattan, posed a serious traffic problem. To enable pedestrians to reach the river front in safety, as well as to provide a non-stop route for motorists using the Franklin D. Roosevelt Drive, the city recently authorized elevation of this heavily-traveled thoroughfare from 15th St. to 25th St. Construction of the four-lane elevated highway was handled by P. T. Cox Construction Co., Inc., and P. J. Carlin Construction Co., both of New York. Bethlehem fabricated and erected the structure, and also furnished H-piles and reinforcing bars.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

*On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation*
*Export Distributor: Bethlehem Steel Export Corporation*

## STEEL FOR HIGHWAYS

**Dowel Units • Reinforcing Bars • Guard Rail Posts**
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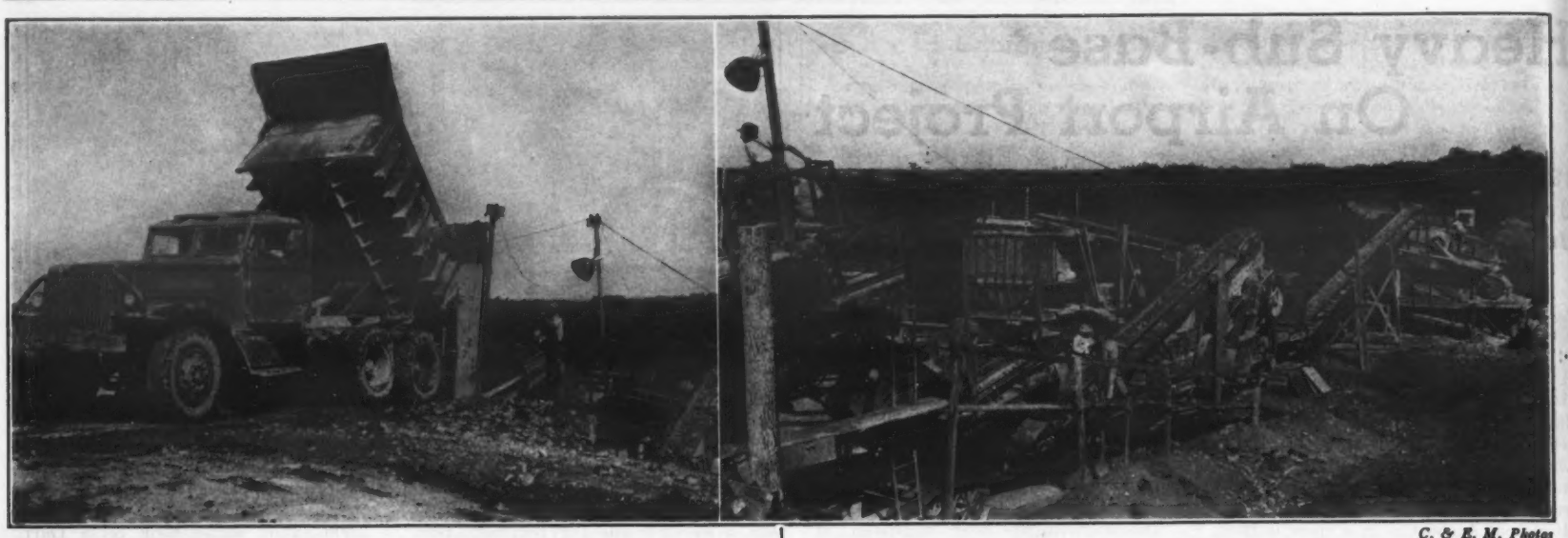
BETHLEHEM STEEL

For Over 70 Years Builders of Fine WHEEL BARROWS: AMERICAN STEEL SCRAPER CO. Sidney, Ohio



*C. & E. M. Photos*

**The 12-cubic-yard White truck at left has just dumped its load of rock for the Topeka airport sub-base to a Pioneer crushing plant. The photo above shows the route of the rock as it passes through the roll-crusher and screening unit.**

## Heavy Sub-Base On Airport Project

*(Continued from preceding page)*

F. W. Wegley, assistant to General Superintendent Ward Nelson, commented, "Our water pumps have worked harder and steadier than any piece of equipment on the field".

Grading consisted of local work around the various balance points, building the runways up to line and grade. Intensive rolling was necessary to develop the required densities; even then, the subgrade was not as good as some clayey gravel formations found on the hillsides around Topeka. But it was the best there was, and good engineering consists of building installations that will last for years, using whatever native materials are available locally. Construction engineers for the project, incidentally, were Wilson & Co. of Salina, who also designed the new Salina Airport.

### Rock-Crushing Set-Up

The nearest site where suitable rock for the sub-base was located was in a pit about 5 miles from the airfield. The rock deposit here consisted of bedded limestone, with just enough clay overburden mixed in to give it plenty of desirable cohesive fines.

Drilling and loading in the rock quarry were carried on simultaneously with the operation of the crushing plant. It was found to be most advantageous to drill and shoot a block of limestone big enough to run the crusher for two or three days.

Two wagon drills, a Chicago Pneumatic and a Cleveland, were able to make enough footage to break out everything the crusher could use at a production rate of 200 tons an hour. Timken steel with Timken rock bits were used on the wagon drills, tapering the holes down from 2½ to 1⅝ inches in three bit changes to reach the bottom of 24-foot maximum-depth holes. The limestone rock, however, was not unusually hard or abrasive, and generally speaking it drilled nicely. One 500-cfm Chicago Pneumatic air compressor furnished enough power to run the wagon drills at top speed.

The holes were spaced about 8 feet apart, and loaded with Atlas Apcodyn No. 15 powder. Shots were set off by a blasting machine, with an electric blasting detonator in each drill hole. Excellent breakage was obtained, and it was rare indeed that the 1½-cubic-yard shovel dipper found a stone too big to handle.

Blasted stone was handled to three White 12-cubic-yard dump trucks by a Bucyrus-Erie 37-B shovel. The trucks had only a short 600-foot haul to the big crushing plant, one of the most efficient contractor crushers set up in Kansas last spring.

An approach was ramped up to the first unit of the crusher, so the trucks could back right up to the primary

*(Concluded on next page)*

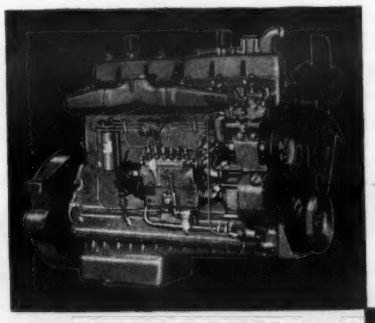
WAUKESHA Gasoline Power... Diesel Power POWER

● On this Chicago Sanitary District job they're pushing a lot of concrete. The Waukesha-powered Model 200 Double *Pumpcrete* pushes it far—1200-ft. horizontally, or 120-ft. straight up, as you want it. And fast! .... 50-65 cu. yds. an hour! It takes real power—Waukesha power—to shove a huge, heavy slug of concrete over a thousand feet long and eight inches in diameter through a pipeline *that fast.* It's a Waukesha Engine—Model 6-MZAU (6-cyl., 4¼-in. x 4¾-in., 404 cu. in. displ.) that puts the power to push behind the *Pumpcrete* piston.

Wherever there are pumps, or pavers, or truck mixers ... or concrete-aggregate-producing quarry or gravel pit machinery ... or general construction machinery—you'll find Waukesha Engines and Power Units.

Waukesha Diesels particularly! With that most outstanding of Diesel design features—the exclusive spherical-shaped combustion chamber! With two swirl cups in the piston crown, turbulence is controlled constantly and automatically. Burning rate speeds up or slows down, with engine speed. No complicated advance and retard mechanism in injection pump is needed.

*Get the Diesel details in Bulletin 1507.*



WAUKESHA Model 148-DK DIESEL six cylinders, 5¼-in. x 6-in., 779 cu. in. displacement, 180 hp. maximum.

WAUKESHA MOTOR COMPANY
WAUKESHA, WISCONSIN
NEW YORK • TULSA • LOS ANGELES



"I BOUGHT ANTHONY DUMP BODIES— —THEY COST ME LESS"

***Contractors everywhere are buying where they can do the best. As one contractor recently remarked:***

***"After weighing all of today's factors of price, quality and performance I bought Anthony Dump Bodies and Hoists - - - they cost me less."***

*For prices on equipment to meet your specifications it will pay you to call your Anthony distributor. Write for name of dealer nearest you. Quick delivery from stock.*

ANTHONY HYDRAULIC

ANTHONY CO. - - Streator, Ill.

feeder and dump their loads direct into the steel hopper. This hopper took a full load quite easily. A Pioneer reciprocating feeder moved the rock out into a huge 48 x 72 primary jaw crusher. This whole unit got its power from a Murphy ME66 diesel engine.

Rock passing through this initial unit was all broken down to about 4 inches and under. A conveyor belt line moved it from the initial crushing unit to the second unit: a Pioneer combination roll-crushing and screening plant, powered by a new Cummins 200-hp diesel engine.

Here the stone passed through the roll crusher and over a 4 x 12-foot screen deck, vibrating at high velocity. Oversize stone retained on the deck passed again through the roll crusher, while material passing the screens went via conveyor to the final machine in the crushing line.

The third and final crusher was a Cedarapids hammermill, also powered by a Cummins 200-hp diesel engine. There was also a sizing screen at this plant, which separated the material to final size. Everything passed from the third unit over a 30-inch conveyor belt, driven at high speed. This line took the material to a 60-ton surge bin, from which it was trucked away.

Unfortunately it was impossible to take all the crushed sub-base material directly to the airport, owing to the necessary close sequence of grading work at the field, and the fact that muddy roads complicated the delivery situation. At least half the total tonnage was stockpiled at the crusher by the four Ford dump trucks stationed there. Later on, this material was hauled out to the airport and spread. Specifications permitted the material to be spread in 17 and 19-inch lifts as required, and rolled with a steel-wheel roller.

The Pioneer crushing and screening machinery was purchased from war-surplus stock. It is the same type of plant which performed so capably—sometimes under officers who had never seen a crushing plant—at Guam, Iwo Jima, and the Philippines.

Maintenance was negligible. Limestone is duck soup for the plant. One operator and an oiler took care of its daily operation and lubrication, plus whatever minor operating adjustments were necessary. Although this set-up recently produced 150,000 tons for a Kansas road job, it has not been necessary to replace or do extensive welding on the roll crushers. The hammermill beaters have been replaced only twice, and there has been absolutely no bearing trouble on the jaw crusher.

### Paving

Concrete paving, not started when this article was written, was handled by conventional methods. The steel road forms were all Blaw-Knox, and the concrete was laid in 20-foot strips. The paver was a Koehring 27-E. Fine grade was put up by a Ford tractor with a rear-end drag and a front-end loader. A Jackson electric vibratory screed finished the surface of the slabs.

The hot-mix asphaltic-concrete paving was mixed through a new Barber-Greene Continuflo asphalt plant. The mix included native mineral aggregates and 150 to 200-penetration asphaltic cement. The laydown machine was a Barber-Greene Tamping-Leveling Finisher.

The enlarged air terminal will permit commercial airlines' planes to land and take off with a much greater factor of safety than heretofore was possible. When the project is all done next month, Topeka will have one of the finest airports, if not the finest, in the state. For the city is looking to the future.

*U. S. Savings Bonds are security bonds. Their purchase provides for your personal security as well as the economic security of the country.*

### Heavy-Duty Engines

A folder on Wisconsin heavy-duty air-cooled gasoline engines, with a 2 to 30-hp power range, is offered by the Wisconsin Motor Corp., 1910 S. 53rd St., Milwaukee 14, Wis. These engines are available in 4-cycle single-cylinder and V-type 4-cylinder models. Photographs illustrate the units while concise tables list the specifications for each. Design features are highlighted on the back page of the catalog.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 88.

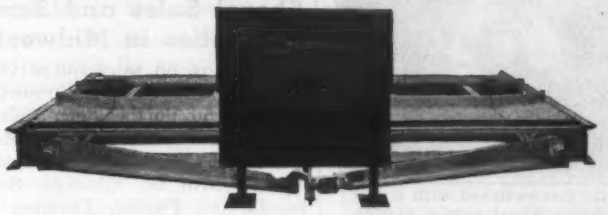
### Tubular Scaffolding

An 8-page fully illustrated catalog on tubular steel scaffolding and equipment was recently put out by Bil-Jax, Inc., of Archbold, Ohio. A large number of drawings indicate the variations in design that may be obtained with the standard sections. All sections are a fabricated, welded, carbon-steel construction and are designed to serve a variety of uses. Casters, pedestals, connecting ladders, brackets, and guardrails are just a few of the accessories included in the folder.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 40.


**WINSLOW—PORTABLE TRUCK SCALE**

**"THE CONTRACTORS' SPECIAL SCALE"**

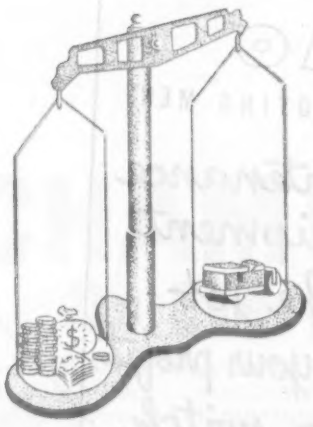


For use at temporary and permanent locations—at stock piles and by bituminous material contractors at the job site.

Capacities: 15-18-20-30 Ton—Write us for your nearest distributor

**Mfd. by: WINSLOW SCALE COMPANY**

P. O. Box 1198 Terre Haute, Indiana



*the Balance*

**IS IN YOUR FAVOR**

**WITH MODERN**

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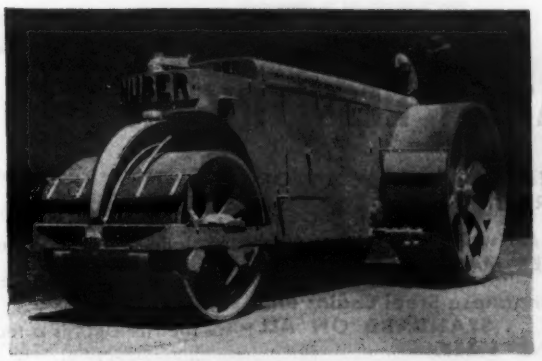
**ROAD MACHINERY**

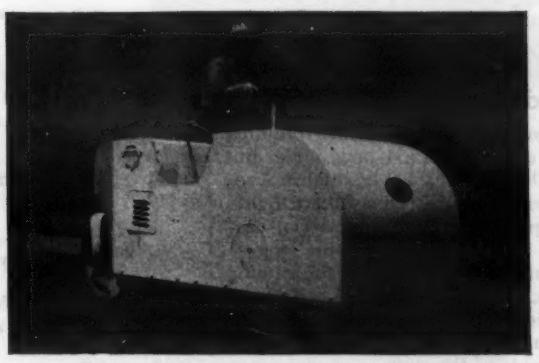
Huber's versatile Road Maintainer—a lift loader, berm leveler, bulldozer, patch roller, snow plow, or rotary broom all in one.

**Today's conditions demand that your operation's budget balance out. Modern Huber road machinery will help you do better than that—the efficient, result-producing Huber line will actually tip the balance in your favor.**

**Road men, from maintenance crews to new road contractors recognize the "extras" that are built into every piece of Huber equipment. Plenty of power ... economical operation ... dependable performance ... and the ability to do any job are Huber traits that point to more profitable road operations for you. Write today for bulletins on the Huber equipment that will best serve you.**



Huber's always dependable 3-Wheel Rollers—built in sizes, from 5 to 12 tons, suited to any rolling operation.



Huber's highly manueverable Tandem Rollers lend themselves to many special tasks. Variable weight models from 3 to 14 tons.

THE HUBER MFG. COMPANY • MARION, OHIO, U. S. A.

**HUBER**

*3 Wheel • Tandem*

**ROAD ROLLERS *and* MAINTAINERS**

A Speedmatic saw equipped with a new type of abrasive wheel cuts a section of 24-inch cast-iron pipe on a 6-mile gas main for the Citizens Gas Coke Utility of Indianapolis.

## New Abrasive Saw For Pipe Cutting

Using a new type of wheel which is abrasive throughout the entire body of the blade rather than on the cutting edge alone, the Speedmatic electric saw can deeply score even the heaviest cast-iron pipe, says its manufacturer, the Porter-Cable Machine Co., 1714 N. Salina St., Syracuse 8, N. Y.

The saw can be adapted to follow the contour of the pipe. Either blocks or rollers can be attached to the front and back of the standard saw base to make it seat properly on the curved surface. The abrasive wheel is then adjusted for the cut with the micrometer set screw, which raises or lowers the blade ⅛ inch for each full turn.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 142.

## Goggle for Welders

A new welders' goggle, compression-molded of a strong and durable phenolic compound that is non-flammable and resistant to moisture and heat, is announced by American Optical Co., Southbridge, Mass.

The goggle features an indirect ventilated louver side-shield and individually molded non-reflecting eyecups which provide a snug fit. The eyecups have large, rounded, face-contacting edges.

Other features include wide-angle vision, a chain bridge enclosed in a plastic-covered tube, large lens rings, and a one-piece rubber headband. The goggle is fitted with 50-mm round Noviweld lenses in shades 3, 4, 5, 6, or 8; and also Noviweld Didymium lenses in shades 3, 4, 5, or 6.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 82.

## Modular Building Units

Information on modular building units is available in a 4-page folder put out by Durisol, Inc., 420 Lexington Ave., New York 17, N. Y. Durisol is a lightweight pre-cast concrete material employing a mineralized organic aggregate. Units made of Durisol, the catalog explains, are rigid for semi-structural applications, insulating, fire retardant, and sound-absorbing. Standard sizes and weights of the units and properties of Durisol are listed in the folder, with drawings of the various units.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 75.

## Concrete Machinery Data

A catalog describing a variety of concrete machines is offered by the Universal Concrete Machinery Co., 297 S. High St., Columbus, Ohio. It presents information on concrete-pipe machines, block machines, mixers, skip loaders, off-bearing carts, forms, cores, steel block racks, pallets, hand-lift trucks, and other auxiliary equipment. Forms in the back of the catalog provide opportunity for the reader to secure detailed information on any particular type of equipment.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 136.

## Shovel Sales and Service Facilities in Midwest Area

From now on, sales and service of the Model 70 Clipper shovel in northeastern Illinois and northeastern Indiana will be handled by the Chicago Machinery Branch of Gar Wood Industries, Inc., at 301 W. 37th St., Chicago. Set up to handle the Findlay Division Clipper, the new branch is a separate organization from the existing Chicago Factory Branch which handles products of Gar Wood's Wayne Division. It is headed by R. M. Ashley, Manager, who used to be Assistant to the Sales Manager of the Findlay Division.


Hi- LO- CONCRETE TRANSPORT MIXER CO.

TRUCK MIXER

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DISCHARGE
PRODUCTION
SPEED
PROFITS

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WEIGHT
COST
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TIME LOSS

*Revolutionary Truck Mixer Design*

CONCRETE TRANSPORT MIXER CO.
4984 Fyler Avenue, St. Louis 9, Missouri



MEMO

TO ALL-EARTH-MOVING MEN

When maintenance on your equipment slows up the job and lowers your profit, it is time to switch to the bucket

THAT GIVES LOW-COST MAINTENANCE — FREE OPERATION RESULTING IN BIGGER PROFITS

★ Full Payload Every Time . . . FOR MORE PROFIT.

★ Rugged All-welded Construction . . . LOWER MAINTENANCE COST.

★ 12% Manganese Steel Chains and Fittings . . . STANDARD ON ALL TYPES AND SIZES.

★ A Type for Every Job . . . light, medium, or heavy-duty. WITH OR WITHOUT PERFORATIONS ⅜ to 40 Cubic Yards.

Stoppages caused by faulty equipment result in loss of time and money. Hendrix Lightweight Dragline Buckets are designed and are capable of handling all types of excavating with less loss of time and less maintenance.

The HENDRIX is a *tough bucket!* Manganese steel chains, fittings, and tooth-points take the brunt of abuse. The all-welded construction assures maximum strength. Perfectly balanced, this is one bucket with which operators can easily get a full payload every trip. It's the one *bucket* operators throughout the country know can "take it" and give lasting service.

HENDRIX Lightweight DRAGLINE BUCKETS

*For descriptive literature ask your dealer or write*

HENDRIX MANUFACTURING CO., INC.

MANSFIELD — LOUISIANA

# Portrait in Print

By BILL QUIRK

## Southern Dredging Contractor Designs and Builds Own Dredge

✦ WHEN he graduated from the University of Michigan in 1923 with a degree in naval architecture and marine engineering, D. Dunwody Atkinson, then of Brunswick, Ga., had a choice of two job openings. One was with the east-coast shipbuilding division of one of the country's largest steel corporations. On that job he would bend over a drafting board and design ships. The other position was field engineer for a dredging contractor who was digging a 3-mile ship channel from the Atlantic up to Fort Pierce on the east coast of Florida.

The dredging company promised the young graduate long hours of hard work, but also a power boat to get around in afloat, and a low-slung roadster to cover the work ashore. The latter inducements offered by the contractor were powerful persuaders to any 24-year-old, especially to one who had been brought up around boats along coastal Georgia. The steel company's loss of a naval architect was a gain for the construction industry. For after one other job with a contractor, and two years of additional experience, the young dredgeman in 1925 went into business for himself, forming the Atkinson Dredging Co. which has been active on the east coast of New Jersey to Florida for nigh on to a quarter of a century.

D. Dunwody Atkinson—the first D. stands for Dean—recently celebrated his 50th birthday with a party. He designed the invitation himself on a piece of tracing cloth, and had blueprints made for his "Half-Century Ball" as he termed it.

"I'm just starting the youth of old age," Atkinson remarked with a chuckle, blue eyes twinkling in a face evenly tanned from years of exposure to the sun and wind. He is a good-looking man of average height and build, whose brown hair is greying around the edges. His tiny sand-colored mustache is neatly trimmed, and he dresses well, except when he dons working clothes for a look over his jobs. Then he pulls on a pair of rubber boots, khaki trousers that may be held up by a string in lieu of a belt, and dispenses with a necktie. The rough and ready working attire is primarily for getting around the spoil areas where his dredge is pumping. On the dredge itself, from lever room to engine hold, no one need change into work clothes, for Atkinson sees to it that his dredges are spotlessly clean. Having sailed all his life, he feels that there is no reason why a dredge cannot be as shipshape as any other craft that floats.

He is imbued with a ready wit, a keen sense of humor, and a sound understanding of human nature—characteristics invaluable to a contractor, and to a dredging contractor in particular. The latter, Atkinson points out, is different from the average contractor in that he never sees where he is working, as the job is usually covered over with water.

### Jekyll Island Causeway

His big job of the moment is dredging in connection with the construction of Jekyll Island Causeway, a 12½-mile highway job involving the excavation of muck and pumping in sand for the hydraulic fill. The new causeway, off the southeastern coast of Georgia near Brunswick, is a relocation of U. S. 17, and eventually will provide access from the mainland to fabulous Jekyll Island. Jekyll, one of Georgia's Golden Sea Isles, is a former millionaires' retreat, but is now owned by the State and is used as a public park.

"I always wanted to get a job in (*Continued on next page*)

*C. & E. M. Photo*

**Meet D. Dunwody Atkinson, founder and President of the Atkinson Dredging Co., of Norfolk, Va., which has been active on the east coast of New Jersey to Florida for almost 25 years.**

Specify KORK-PAK Joint Filler for use between floor slabs and footings in basementless houses and structures on grade and get the extra KORK-PAK insulating feature as well as a waterproof, resilient, non-extruding filler that will keep the joint effectively filled at all times.

KORK-PAK is composed of cork granules bonded together with asphalt between two sheets of asphalt-saturated paper—it's waterproof and insect proof to assure positive joint filling for the life of the building.

KORK-PAK is the least expensive non-extruding joint filler made—low cost, coupled with its high insulation coefficient, makes KORK-PAK the ideal joint filler for any type of construction.

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Write for complete details on KORK-PAK. See our Catalog in SWEET'S.

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**Truck-built for the tough truck transport jobs, these champions of the 2½-ton field pull their loads with brilliantly performing, GMC-built, 270 cubic inch "Army Workhorse" engines . . . they carry their loads on strong, sturdy chassis that have deep, stiff frames and heavy, rugged axles . . . and out front of the loads their "king-sized" cabs offer comfort, convenience and safety that's unsurpassed.**

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**GMC TRUCK & COACH DIVISION • GENERAL MOTORS CORPORATION**

**GMC TRUCKS**

## Dredging Contractor Builds His Own Dredge

(*Continued from preceding page*)

Brunswick, my old home town," mused Atkinson, a trace of nostalgia in his voice as he glanced around at the great live oaks, heavily draped with Spanish moss, lining the streets of the historic city. "But this is not my job alone. I am a subcontractor on the causeway, and lease my dredge, the Hampton Roads, to the Hendry Corp. which has the main dredging contract."

The Hampton Roads, a diesel-driven craft with a 16-inch suction pump, can be seen across the marshes from the Brunswick docks of the South Shipyard which was so active in the last war.

"The port was even more active when I was a young fellow home from college on summer vacations and working for the Corps of Engineers," Atkinson reminisced. "At that time the Army District Engineer had his headquarters in Brunswick, instead of Savannah where it is now. It was nothing to see 40 or more ships in the Turtle River around Brunswick, or standing off St. Simons Island Sound. I worked as a draftsman, surveyor, and also inspector on a contractor's dredge for the Army Engineers. There was always plenty of activity around the harbor in those days."

### Love of Water

As a boy Atkinson had learned to love the water. His father, one of the South's most prominent dentists, had a summer place on an island in the Little Satilla River which flows between the marshes to the sea south of Brunswick. He was always being called on to rescue some visiting fisherman, unfamiliar with the tides and devious waterways, who got stranded on a hummock over night.

"The shore was not as well protected then by the Coast Guard as it is now," Atkinson recalled. "Everyone knew my father, and he was always ready and willing to perform an amateur rescue. And I, of course, naturally went along with him. I had an interesting boyhood in these parts, hunting alligators, shooting and cooking marsh hens, or looking for turtle eggs. The monster sea turtles buried them in the sands along the ocean beaches above the water line during the full of the July moon."

From his early association with boats, it was only natural that Dunwody Atkinson, after graduation from Glynn Academy in Brunswick, should follow naval architecture and marine engineering. "Michigan was, and still is, one of the best universities in the country for instruction in those subjects," said Atkinson.

The young engineer put his technical knowledge to the test early on the first job of his newly formed company. He had been awarded a contract by the Northwood Investment Corp., a Palm Beach real-estate concern, to "make" land by pumping hydraulic fill behind bulkhead walls. Atkinson started more or less on the proverbial shoestring, with a little luck dangling at the end. The contractor with the lowest bid had so much other work that he could not begin operations soon enough to suit the realty firm. Atkinson, the second lowest bidder, was then offered the job at the lower price. He refused, thereby establishing a precedent that he has adhered to ever since.

"I'm not one to bid wildly," explained Atkinson, who is conservative in financial matters. "I always try to submit the lowest price at which I feel I can do the job, and then stick to that figure. The real-estate firm gave me the work at my own price of 24 cents a yard. But then I had to hurry and get a dredge to do the work."

### First Dredge

He bought a newly built wooden barge, re-modeled it, installed a Morris 10-inch pump unit that was electrically driven from a power line connected to shore facilities, and was soon placing hydraulic fill. The first dredge was christened the "Northwood" after the realty company. It pumped 350,000 cubic yards of material and then the contract was doubled. Altogether Atkinson spent 18 months dredging at that location. He took time off in August 1926 to marry Margaret Dunlop of Gadsden, Ala. They have four children. The oldest, another Dean Dunwody, now 20, is studying civil engineering at The Citadel, a Charleston, S. C., military college. The remaining three are girls—Margaret, Allene, and Joan—17, 14, and 9 respectively.

After finishing the Palm Beach project, Atkinson installed diesel engines in the dredge and moved it south along the coast to Stuart, Fla., for some dredging and bulkhead work for that city. Meanwhile the infant dredging company bought a second dredge, also with a 10-inch pump, and with a steel hull. This second of the fleet was named Lake Boynton after a community by that name south of Palm Beach where it went to work reclaiming swamp land for a real-estate company. The new dredge had but a brief existence. The 1927 hurricane that lashed the east coast of Florida picked up the Lake Boynton and set her down 5 miles inland in the direction of the Everglades.

"Fortunately we lost no lives," Atkinson recalled. "The crew had sought safety on shore, and only a watchman was left on board. He was later discovered unharmed, stretched out on a mattress 20 feet up in the air supported on some telephone wires. The storm did some queer things. The same wind blew the top off the Northwood, but we re-built her. We next got a job at Morehead City, N. C., and leased the 12-inch dredge Neverest from the Coast Construction Co. at Beaufort, N. C. We later bought it for ourselves, re-modeled it, and increased its size to a 14-inch pump and called it the Pamlico.

During the last war the Pamlico was taken over by the Army, dismantled, and shipped aboard a freighter bound for India. It was slated for dredging duties in the Ganges River, but the freighter carrying it was torpedoed by

(*Continued on next page*)

for CHEWING ROCK . . .

Highest Quality Equipment means

**JUNIOR TANDEM**

A rock-chewing workhorse for an all-around variety of rock and gravel jobs, quality-built for big volume production and low-cost operation. The Cedarapids roller bearing jaw crusher used is engineered for maximum capacity and minimum maintenance; exclusive bearing seals reduce lubrication time and expense; heavy, counterbalanced flywheels slash power requirements. The high capacity, heavy duty roller bearing roll crusher is made with manganese steel roll shells to guarantee long wear and economy. Cedarapids *horizontal* vibrating screens provide more accurate grading, larger capacity, better screening action and lower maintenance. In addition to these cost-cutting quality advantages, you get capacities ranging from 70 to 100 tons per hour, *and more,* of 1" material. Complete portability, plus fast set-up and take-down, gets machines on the job fast. It's a money-maker on any rock or gravel job!

**4033 HAMMERMILL SECONDARY**

HERE'S a peak-efficiency machine for a wide variety of reduction jobs. 100 to 180 tons of 1½" roadstone, or 20 to 60 tons of agricultural limestone, or a percentage of both can be produced in one operation. The Cedarapids heavy duty hammermill features a new principle of crushing to give a larger output of finer and more uniform finished products, and will produce more tons per hour than other comparable types of pulverizing equipment. A separate power unit with variable speed control operates the hammermill to produce the type of finished product desired without affecting the speed of screens and conveyors. Convenient portability, fast and easy set-up and take-down, minimize lost time between jobs. And for double duty service that puts money in your pocket, you can interchange the 4033 hammermill unit with a 4024 Cedarapids roll crusher to make this plant a high volume rock crushing secondary.

Buy the best . . . Buy Cedarapids

IOWA MANUFACTURING COMPANY

Cedar Rapids, Iowa, U.S.A.

an enemy submarine and sunk in the Indian Ocean.

### River and Harbor Work

But before that, the Neverest or Pamlico, the Northwood, and a leased dredge, the 12-inch Cherokee, were working year in and year out on various river and harbor projects, and on the Inland Waterway along the Atlantic Seaboard. Work was concentrated in the Norfolk, Va., area, and Atkinson established his residence there in 1931, having previously lived in Palm Beach and Jacksonville. He still maintains an office in the latter city.

Dredging headquarters are in the Atlantic Yacht Basin which he also owns, south of Norfolk at Great Bridge on the Inland Waterway. Here are a marine railway, machine shops, and complete facilities for overhaul and repair. Atkinson is Commodore of the Norfolk Yacht and Country Club, a position of considerable weight in yachting circles. In 1935 he designed and built his own yacht, the 40-foot auxiliary sloop Mardean, named after Margaret and Dean, the two eldest of his four children who were around at that time. The yacht sleeps six, but in the summer it has to accommodate from 15 to 20 small fry and teen-agers, friends of the Atkinsons, whom the Commodore takes to regattas in Chesapeake Bay. His children have class boats of their own, and, like their parents, are good sailors.

Along with his dredging activities, Atkinson takes a keen interest in the Naval Architects and Marine Engineers Society. He is also a member of the American Society of Mechanical Engineers. This versatile dredgeman keeps a fine palomino stallion that he rides whenever he can spare the time. But the sailor on horseback is as attached to his dredges as any ship captain is to his vessel. More so, for Atkinson designs his craft himself.

### Own Design

The Hampton Roads, latest of the Atkinson dredges, was designed entirely by its owner, and built to his specifications in 1940. Its hull is built from long-leaf yellow pine virgin timber, 40 feet long, procured from the John Payne Whitney forest lands in Thomasville, Ga. Atkinson conveniently has a brother-in-law who is a surgeon in that town. Through the war years the Hampton Roads and the Northwood did yeoman's service for the Army, Navy, and private firms engaged in war work—filling in marshlands, dredging channels, pumping hydraulic fill for air bases, access roads, ports of embarkation, etc.

A new steel-hull dredge was built for Atkinson in Pittsburgh by the Dravo Corp. Sometime last May it was to be shipped in sections by rail to Wilmington, Del., to be assembled and fitted out. When the 14-inch Northwood completes a maintenance dredging project in the James River from Richmond to Hopewell, Va., she will lose her identity, and also her machinery which will be installed in the new dredge. The latter will also be called the Northwood. The wood hull of the old Northwood will be used as a supply barge.

### Collector's Items

D. Dunwody Atkinson had just returned to shore after a visit to the Hampton Roads and the hydraulic fill area that was being pumped up for the Jekyll Island Causeway. He was toying with a huge shark's tooth, fully 4 inches long and just as wide, that he had picked up on the fill.

"The blackened old thing may be a million years old," he conjectured. "At times a dredge pump turns up some mighty strange things on the beach. Once my shore crew of negroes was just getting ready to break line when a man's head rolled out the pipe at their feet. The head was followed by an arm, a leg, and parts of a torso. The shore crew beat it from that spot as fast as they could go. Turned out it was a man who had drowned some time ago, and the powerful suction pump just drew what was left of him into the line.

"Sometime before the war, while dredging a channel in the Rappahannock River near Fredericksburg, Va., the scene of many a furious battle from 1861 to 1865, my dredge pumped out a fine old pair of brass Army spurs. I polished them up and showed them to the Colonel, a New England Yankee, who was then District Engineer of the Corps of Engineers supervising the work. When he asked me where they came from I told him his Yankee granddaddy must have dropped them while rapidly retreating back to Connecticut in the War Between the States. I had my joke, but I never did get the spurs back."

### War Between the States

The War Between the States is more than just school-book history to this son of the Deep South. Alexander Stephens, Vice President of the Confederacy, and Atkinson's grandfather were close friends and classmates at the University of Georgia where they graduated in one-two order for honors respectively. The elder Atkinson was an astronomer of note, and lived on Incachee Plantation in Camden County, south of Brunswick on the Georgia Coast. After the war Alexander Stephens lived for a while with the Atkinsons.

"Grandfather feared the Yankees eventually would overrun Georgia and lay waste the plantation," Atkinson spoke with great feeling of his early family history. "So he moved the family to Atlanta, where he also had a home, thinking that they would be safe there in the strongly defended city. But Atlanta fell after a long seige, as you know, and grandfather's home was burned to the ground, and the family had to flee the city. Sherman in his march to the sea, ironically enough, never did get close to Incachee, the plantation estate."

The War Between the States, 85 years in the past, seemed not so very remote after Atkinson had finished telling his story.

*(Concluded on next page)*

or SPOUTING BLACKTOP!
BIG VOLUME OUTPUT
MINIMUM MAINTENANCE
LOW COST OPERATION
Cedarapids
BITUMINOUS MIXING
Equipment
MODEL "E"
BITUMINOUS MIXING PLANT
FOR "spouting blacktop" in volumes to meet your biggest production needs. This all-electric batch type plant handles 2000, 3000, or 4000 lbs. per batch, combining high capacity and accurate batching with great portability and economy. Perfectly matched screens, batchers, pug mills, elevators and driers meet the most exacting specifications with a smooth, steady flow of material. The Cedarapids-Symons horizontal vibrating screen, with the driving unit mounted outside the hot zone, is fully protected from heat and dust. Cedarapids famous twin shaft pug mill thoroughly mixes the bitumen and aggregates at high speeds. Aggregate is thoroughly dried by Cedarapids driers. Individual electric motor drives on all units assure smooth, efficient operation and low maintenance costs. Push-button controls are centrally located within easy reach and sight of the operator.
MODEL "FA"
BITUMINOUS MIXING PLANT
PORTABILITY plus! The Model "FA" is the most portable batch type bituminous mixer in the Cedarapids line, and can be set up for operation in a matter of hours. Just lift the top section of the elevator, extend the bottom section and install the cover; drop the operator's platform and lower section of the skip track into position; raise the skip head pulley frame; level up the scale frame and the "FA" is ready to grade the aggregates, weigh the material, mix it to meet the most rigid specifications, and do it all at lower cost. The perfectly matched screen, 25 cu. ft. batcher and pug mill, and elevator will produce as much as 350 tons per day. Centralized air controls insure fast, easy, one-man operation. Quality construction of every part means long-term service at lowest cost operation and maintenance.
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The IOWA LINE of Material Handling Equipment Includes:
ROCK AND GRAVEL CRUSHERS • BELT CONVEYORS • STEEL BINS • BUCKET ELEVATORS • VIBRATOR AND REVOLVING SCREENS • STRAIGHTLINE ROCK AND GRAVEL PLANTS • FEEDERS • TRAPS • PORTABLE POWER CONVEYORS • PORTABLE STONE PLANTS • PORTABLE GRAVEL PLANTS • REDUCTION CRUSHERS • BATCH TYPE ASPHALT PLANTS • HAMMERMILLS • DRAG SCRAPER TANKS • WASHING PLANTS • SOIL COMPACTION UNITS • STEEL TRUCKS AND TRAILERS • KUBIT IMPACT BREAKERS

*C. & E. M. Photo*

**That thing which D. Dunwody Atkinson is holding is a 4-inch-long shark's tooth his dredge pumped up on the fill for the Jekyll Island Causeway.**

## Dredging Contractor Builds His Own Dredge

*(Continued from preceding page)*

### All in Fun

But the story his friends like to tell about the fun-loving Dunwody has a modern setting. One day Atkinson's dredge was tied up at a dock for an overhauling, and the owner himself in a pair of dungarees was working steadily on deck unbolting the flange plates on a pump section. A union organizer, smoking a big cigar, at that moment stepped aboard to do some recruiting if possible.

"Working hard, bub?" queried the organizer in a patronizing manner.

"Yes sir," answered Atkinson who had recognized the fellow and decided to pull his leg a little. "I work day and night, long hours at hard work," continuing to unscrew the flange bolts.

"You're being exploited, son," wrathfully exclaimed the union man, puffing furiously on his cigar. Then curiously, "Are you getting well paid for this overtime you're putting in?"

"No sir," was the meek reply, as Atkinson with a perfectly straight face added, "Haven't drawn any overtime since I came aboard this dredge."

"Where is that boss-man?" roared the bleeding heart, now in full cry. "Show me that no-good, low-down, stinkin' son of a ———. I'll settle with him right now!"

"Here he is right in front of you," yelled Atkinson, jumping up from the deck, wrench in hand, and with a ferocious scowl on his face advanced towards the now dumbfounded organizer. That worthy turned to flee, forgot he was on a dredge, and plunged over the side into the river. Atkinson stopped laughing long enough to throw a line to the soaked union man, then with true Southern hospitality said: "Climb aboard, get out of those wet clothes, and help yourself to some hot coffee in the galley while they're drying out."

That's D. Dunwody Atkinson all over. Anything for a gag!

## Multiple Signals For Hoist Control

The operation of high-speed materials hoists used in the erection of tall buildings may be controlled by a multiple signal and alarm system such as that manufactured by Panalarm Products, Inc., 7216 N. Clark St., Chicago 26, Ill. The installation of such safety control devices offers protection to men and equipment and contributes to efficient delivery of materials.

Panalarms are a sound and visual alarm system which may be actuated by any remote switch, thermostat, float switch, or, in fact, change in any equipment operation which can be reflected by an electric impulse to open or close a small relay. Many combinations of lights and signals are available to indicate the source of trouble and to indicate when corrective measures have been taken. Safety and reliability are effected by making the lamps glow dimly during normal operation. If the signals go out of service or the bulb burns out, this is immediately apparent to the operator.

For hoisting operation these systems will indicate at all times whether any gate in the hoist shaft is open or closed. Their flexibility in use and design permits a variety of applications. Bulletin 300 Series explains in detail the various types of equipment available.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 102.

## New 8-Inch Shaper

A new 8-inch shaper has been introduced by the Logan Engineering Co., 4901 W. Lawrence Ave., Chicago 30, Ill. With a maximum stroke of 8½ inches, this machine can handle straight and angular cuts, squaring, machining, and slotting.

The Logan shaper features six automatic feeds in either direction, from 0.002 to 0.012 inch, which are set by a dial with readings graduated to 0.001 inch. Speeds from 35 to 180 strokes per minute are effected by turning a handwheel control. The table, 8 x 8 inches, has a travel of 5½ inches vertically and 10½ inches traversely. The company states that since the tool head may be rotated 360 degrees, squaring the ends of almost any length of stock is possible.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 112.

## Hand Hammer-Drill

A new type of electric hammer has just been put on the market by the Syntron Co., 227 Lexington Ave., Homer City, Pa. This tool both hammers and rotates the drill bit at the same time. This, the company says, takes the hard work out of drilling concrete, masonry, or rock by eliminating the quarter turning of the star drill wrench by hand to get a round hole.

**A new electric-powered hand hammer-drill designed by the Syntron Co. features an automatic hammering and rotating bit for masonry drilling.**

Syntron has also developed a new line of drill steels to be used with these new hammers. They have carbide cutting edges and spiral flutes designed for fast operation and for drilling the hardest rock, granite, etc. They clean the cuttings out of the hole as the hammer rotates the drill steel.

The hammer will drill up to 2-inch diameter holes. It is of electromagnetic design with a free-striking piston and has an automatic safety clutch on the rotating drive that will slip if the bit binds or gets stuck in its hole. The percussive hammering can be stopped while the bit continues to rotate to clean the hole. The tool weighs 38½ pounds and is identified as the Model 25-RO rotating electric hammer. It is available for either 110 or 220-volt ac operation.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 25.

## Cotton of FWD Co. Dies

Joseph D. Cotton, Vice President and Director of The Four Wheel Drive Auto Co., died recently at his home in Clintonville, Wis. He had been connected with FWD since 1915, and was active in the company until his death.

STOPS MOISTURE FROM FALLING INTO TRACTOR EXHAUST . . . Just slip the "RAINCAP" over the open end of your tractor exhaust, and you eliminate forever the danger of moisture falling into the exhaust, injuring your tractor.

THE CAP THAT DOES NOT FORGET TO CLOSE . . . Completely automatic—the "RAINCAP" is counter-balanced to open when the tractor starts and close when it stops. Rust proof—made of cast aluminum with bronze bushing—can be installed in two minutes. F.O.B. Waterloo, Iowa.

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Immediate delivery

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| 1 | 2⅜" | $1.90 |
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| 55 | 2" | 1.90 |
| 5x | 1¾" | 1.90 |
| 6 | 1½" | 1.90 |
| 66 | 1⅜" | 1.90 |
| 7 | 2½" | 1.90 |
| 8 | 3" | 2.50 |
| 9 | 3⅛" | 2.50 |
| 10 | 3¼" | 2.50 |
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| 115 | 3¾" | 3.00 |
| 12 | 4" | 3.00 |
| 123 | 4⅛" | 3.00 |
| 25 | 4¼" | 3.00 |
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SPECIFY STRAIGHT FRAME CONSTRUCTION for ALL-WEATHER "STRAIGHT THROUGH" SERVICE

Duplex Straight Frame Construction means much easier, much more dependable plow and scraper mounting!

DUPLEX TRUCK COMPANY
LANSING 4, MICHIGAN
PROTECTED DEALER FRANCHISES AVAILABLE IN SOME AREAS

Give Now
To Your Community Chest

This Scheu distilling-type oil-burning salamander produces 100,000 Btu per hour on ¾ gallon of fuel oil.

## New Distilling-Type Salamander Offered

A distilling-type oil-burning salamander manufactured by Scheu Products Co., Ltd., Upland, Calif., produces 100,000 Btu per hour on ¾-gallon consumption of fuel oil. Used for inside or outside construction, it is designed to keep freshly laid concrete from freezing during winter months, to heat portable field offices, to dry plaster, and for other similar heating needs. It burns any light fuel oil.

The patented return-gas stack design is said to offer excellent combustion and soot-free characteristics, and the tall stack gives a large radiating surface. The distilling-type salamander has no wick, valve, jets, or other parts which require replacement or repair. The burning rate—10 to 20 hours—is controlled by regulating the amount of air entering the heater's bowl.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 65.

## Gar Wood Names Two Managers for Divisions

Frank J. Hasselman has been appointed Division Manager of the St. Paul Division of Gar Wood Industries, Inc., Minneapolis, Minn.—maker of the St. Paul line of dump-truck bodies, hoists, and truck patrols. He succeeds W. L. Larson who has become Division Manager for the Gar Wood Wayne Division.

## Pipe and Fittings Manual

An installation manual, M-8801, for use in connection with the Karbate pipe and fittings booklet, M-8800B, has recently been offered by National Carbon Co., Inc., 30 E. 42nd St., New York 17, N. Y. The manual gives detailed information on the installation of Karbate pipe, fittings, and connections; and on the cements used to bond these products. It also shows the method of assembling Karbate pipe and fittings.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 41 for the manual (M-8801) and No. 42 for the pipe and fittings booklet (M-8800B).

## Fluid Snow-Plow Wax

A new liquid snow-plow wax, Snow-Rem, is announced by Speco, Inc., 7308 Associate Ave., Cleveland, Ohio. When applied to plow wings and moldboards, this wax is said to produce a hard slick surface. It helps to prevent the piling up of snow and eliminate costly delays for clearing and breakdowns from overloading, the company says.

Snow-Rem has a high Carnauba wax content and may be applied with an ordinary paint brush or spray gun. Temperature at application should be above freezing and the plow surface should be dry. It is recommended that users apply the first coat of wax before plows are put in service. The company claims that Snow-Rem also acts as an effective means of preventing rust.

Snow-Rem snow-plow wax may be applied by brush or spray gun.

A plow may be placed in service within 20 minutes after application. One gallon of wax covers 250 square feet by brush application or 300 square feet by spray, the company says. Snow-Rem is available in 1-gallon open-top cans, 5-gallon pails, and 55-gallon drums.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 26.

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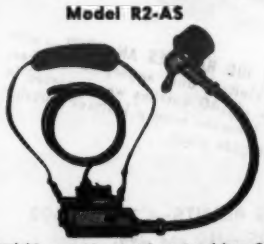
CONCRETE SURFACER
Model R2-AS



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Ideal for surfacing concrete construction and other applications.
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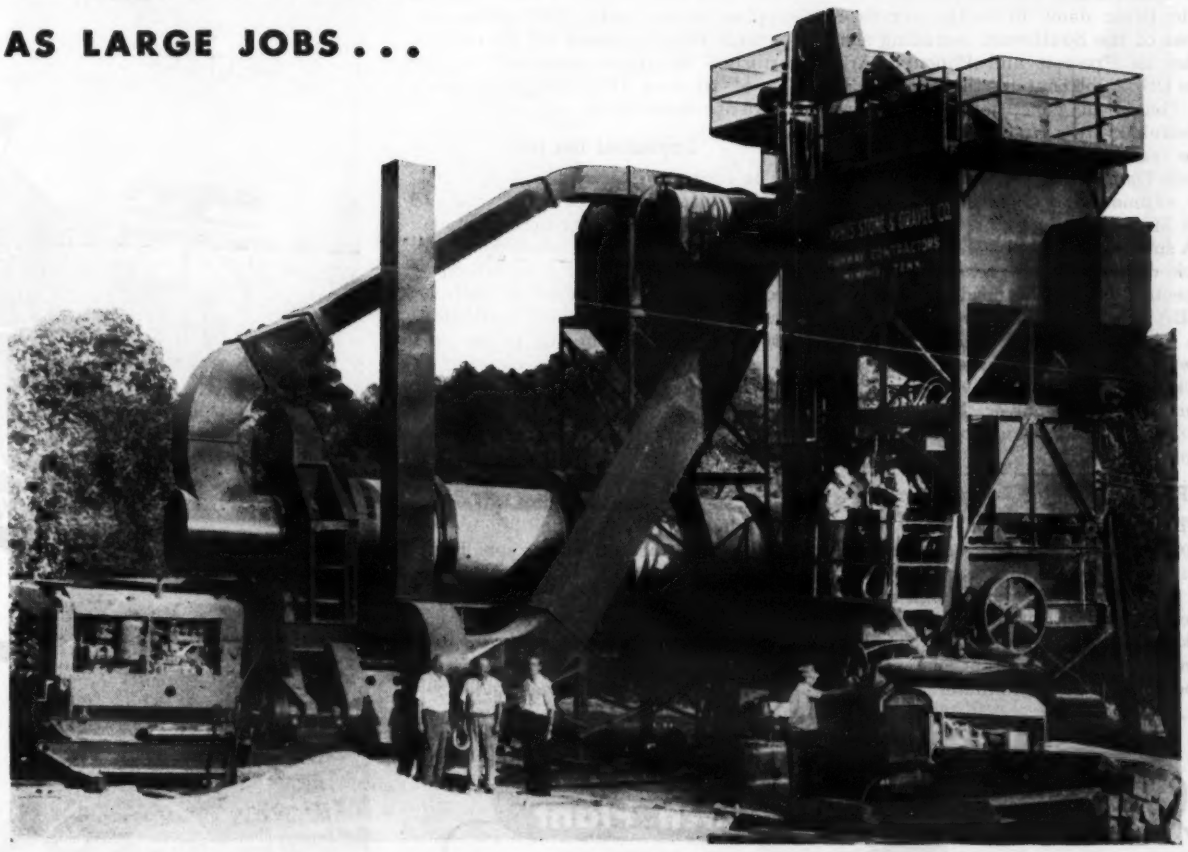

H & B Model PA Portable Asphalt Plants

MOTO-PAVER
Complete mixing and paving machine for travel mix work. Write for Bulletin MP-47.

Shown above is the H & B PA-30 Hot Mix Plant recently delivered to Memphis Stone & Gravel Co., highway contractors, Memphis, Tenn. These PA plants are designed to give efficient production on small as well as large jobs—under a wide variety of operating conditions.

PA plants may be driven with individual motors or from one main power unit for the tower and one for the dryer, using gasoline, Diesel, Diesel electric or electric power. They are easily portable by truck. Low overall height is maintained by using a flat screen, and can be further reduced by use of a depressed driveway. Write for Bulletin P-46.

H & B builds portable and stationary mixing plants of all types, sizes and capacities.

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FOR BEST RESULTS — HOT MIX — BATCH MIX

# Power Line Crosses Southwestern Desert

## 230-Kv Transmission Line Calls for Speed And Special Equipment To Build 325-Mile Job

✦ IMAGINE a concrete job 325 miles long, with only about 16 cubic yards to the mile. Then add mountainous and desert terrain so rough that D8's and dynamite have to be used on the pioneer roads. Then complicate the pours by having to excavate holes in the ground to contain them—sometimes at the cost of a day's hand labor for a gang of men—and add some drilling.

Take all these operations, repeat them over and over, and multiply them by weeks of loneliness in the vastness of the desert.

That, briefly, is a rough picture of the transmission-line job currently being built for the Davis Dam Project of the United States Bureau of Reclamation. A joint-venture firm called USBA Cos. is handling the $2,794,000 contract. The firms who make up the venture include United Concrete Pipe Corp.; Stolte, Inc.; Ralph A. Bell; and Arizona Sand & Rock Co.: all well known through the southwest.

The new 230-kv transmission line under construction will tie present Colorado River dams in to the populated areas of the Southwest, including such cities as Prescott and Phoenix, Ariz. The USBA job contains three schedules, or "legs", of construction. The first schedule is from Hoover to Davis Dam. The second schedule extends from Davis Dam to Prescott. A third schedule extends from Prescott to Phoenix and Mesa.

A smaller contract between Davis and Parker Dams is also under way, and is expected to be finished before the USBA job is through sometime during the summer of 1950. Both contracts, when completed, will interconnect the Parker, Davis, and Hoover Dams for transmission of power into Arizona, southern Nevada, and southern California.

### Passes Through Rough Terrain

The new transmission line passes through some of the most unsettled terrain left anywhere in this country. For the most part it passes through a vast, lonely desert, full of mountains, plains, rocks, cactus, coyotes, and rattlesnakes. Temperatures have been moderate in some sections, but summer work on other parts of the job was blistering hot. Summer temperatures of 115 degrees near Davis Dam are the rule rather than the exception.

Transmission crews move rapidly through the country. On this job the transmission towers are ¼ mile apart, and the crews are building about 4 per day . . . with plans to step this up slightly through the level parts of the job. Thus all equipment must be mobile and powerful.

To increase efficiency and conserve the energy of the men of the 80-man crew in the tough summer days, USBA set up a mobile camp which moves along in 20-mile jumps. On a typical move the camp jumps 10 miles beyond the point of work. It stays at that location until the crews overtake it and work 10 miles to the other side. Then another 20-mile move puts it still another 10 miles ahead of the construction work.

The camp consists of a number of trailers, several tractors for prime movers, and tents. Tents are used entirely for the bunkhouses. One tent serves as a dining room. There is a cold-storage trailer with refrigeration unit, a cook shack in a trailer, a shower and washroom trailer, office trailer, equipment repair and shop trailer, a miscellaneous supplies trailer, and a 2,000-gallon water tank. Electric power for the camp is furnished by trailer-mounted Le Roi diesel-driven 37½-kva generators. There are three in all.

### Layout of the Job

The contract does not include transmission wire. That will be furnished and installed later. Steel structural members for the transmission-line towers are being furnished by the Bureau of Reclamation and delivered by railroad cars to an unloading point in Boulder City for the first schedule of the job. Thus the contract includes clearing all brush over 5 feet high from a 150-foot-wide right-of-way, clearing the tower sites, making the necessary excavations for the foundations, concrete work and final clean-up, in addition to the erection of steel furnished by the Bureau.

Design of the transmission line is generally typical throughout the job. There are three main types of concrete footings: a 24-inch round footing at each of the four legs of the tower; square pads 5 feet long on a side; and square pads 7 feet long on a side. Payments for concrete are made to neat lines under the specifications, so overbreakage and overexcavation are something which is watched very closely.

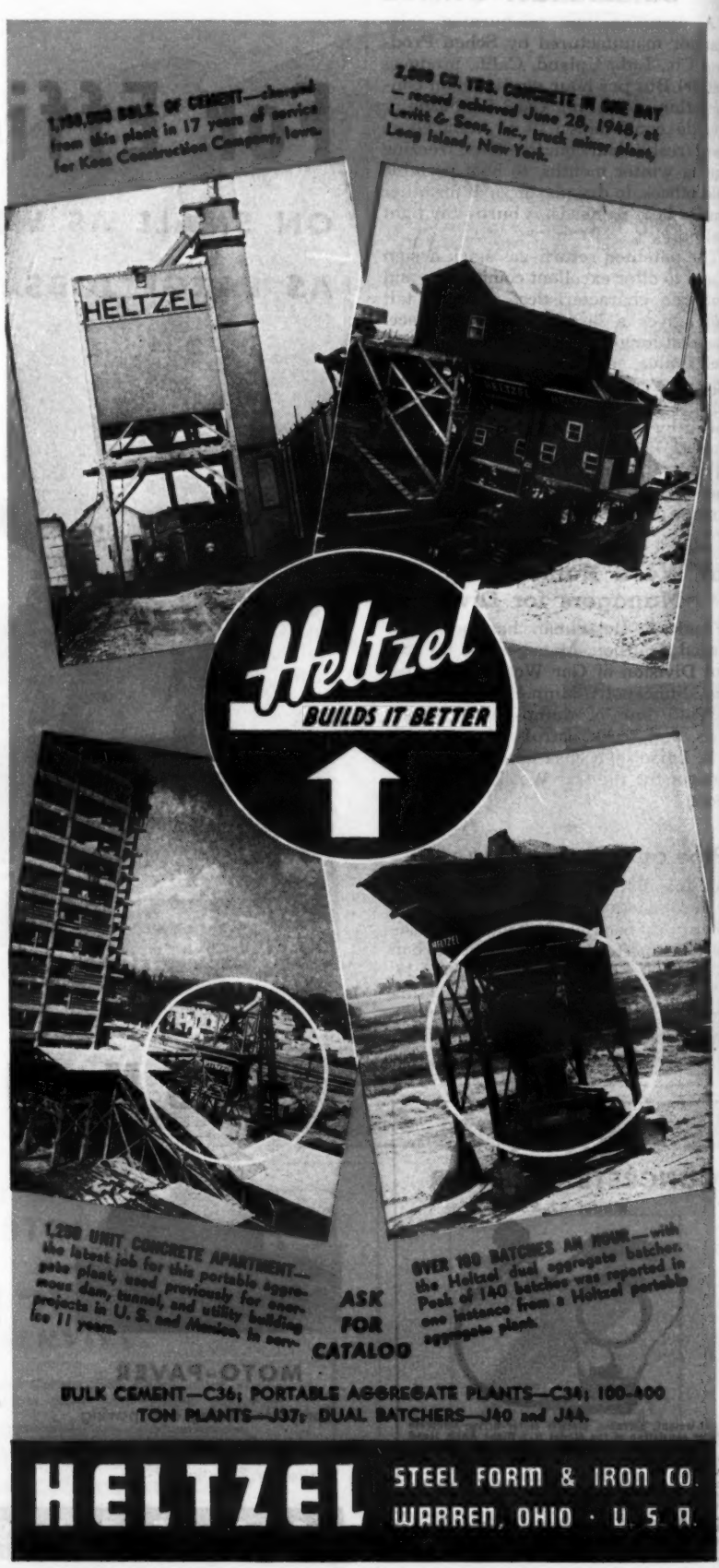
One of the peskiest things about the job is the small quantity of work at each location. Methods of construction mean much. Efficient performance and the efficient use of special equipment might not be so important in the construction of one tower, but multiplied by the number of towers needed to cover 325 miles, they take on a great deal of importance.

When CONTRACTORS AND ENGINEERS MONTHLY visited the job, it had already ironed out to a more or less routine operation. Men and equipment were busy far back in the desert between the small Nevada towns of Nelson and

(Continued on next page)

*C. & E. M. Photo*

**This general view of the all-portable camp shows how barren and desolate a desert will be crossed by the Hoover-Davis Dam leg of the line.**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*C. & E. M. Photos*

**These views of USBA Cos.' transmission-line job show (above) concrete workmen with their special mobile mixer unit making concrete for one of the pours, and (right) a Caterpillar-mounted Trackson front-end bucket pouring concrete in one of the forms.**

Searchlight, in country not visited very often by men. The work was laid out in the following general sequence:

1. *Pioneering and Clearing:* A subcontract has been let to Carney Construction Co. for clearing heavy timber on the right-of-way near Prescott, but with this exception all clearing and pioneer work is being performed as a part of the USBA job.

The problem of a pioneer road on the first schedule from Hoover Dam to Davis Dam is great. For some distance the equipment has been able to use the access road built by Metropolitan Water District, but pioneering work is in full swing. Not only does a 12-foot work road have to be cut through the desert, but access-ways to each tower location also have to go in.

Two Caterpillar D8's, each with a Caterpillar blade, are roughing in this work. As they get the desert leveled off, a Caterpillar No. 12 motor grader follows. While some of the pioneering was done before work started on the other phases, the machines still have to build from 1 to 3 miles of road per day, and that is no small task. Some of the towers are on mountainsides so steep that the new D8's have to make the access roads from the bottom up, because the grades are too steep for the tractors to move in reverse gear, according to a key foreman.

2. *Excavation for Foundations:* The foundation excavations are being made in material which varies from solid rock to earth and conglomerate. There is a great deal of shale and broken volcanic rock also on the Hoover-Davis schedule. The excavations in material other than rock are being made usually by augers, although some hand excavation has also been done.

The round pedestal foundations are being augered by two rigs: one auger mounted on a Caterpillar D2 tractor; the other mounted on an FWD truck. All truck equipment, incidentally, is 4-wheel drive, including the Willys Jeeps in which some of the officials get around.

Occasionally, of course, there is a tower site which is inaccessible even to the equipment the contractors have. In these cases the foundations are mucked out by hand. So much hand labor is required that the excavation crew contains about 35 men. This number, of course, includes men who operate pneumatic drills and other equipment.

In rock, drilling equipment comes into use. The job has about ten pneumatic drills of various makes, but all drill steel is ⅞-inch Timken or Ingersoll-Rand. Timken and Ingersoll-Rand detachable bits are also being used. Compressors include four 105's, a 210, and a 500.

The rock excavations are tough and slow, because too little shooting makes it impossible to get the rock out, while too heavy a charge loosens the rock up so much it creates an over-run of concrete to fill in to solid lines. In this respect practically every foundation presents a special problem. Every possible effort must be made to dig it out to the required dimension and depth . . . but no more.

At this stage of the game also, trucks are hauling what sand, aggregates, and

(*Continued on next page*)

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## Power Line Crosses Southwestern Desert

(*Continued from preceding page*)

cement will be needed. The aggregate supply for the Hoover-Davis schedule is located between Boulder City and Henderson, and it involves hauls up to 65 miles one way. Two 9-yard White trucks are being used to bring this material in to the job. The aggregates are unloaded in approximate proportion to estimated quantities of concrete required, and then adjusted later on if necessary.

3. *Belling and Setting Ground Rods:* Next step in the work is belling out the bottom of the foundation hole, and the installation of the electrical ground cable for each tower. This work is being done by a small crew of men, part of the excavation gang. Specifications require the holes to be free of any loose material, so they have to be cleaned out well.

Reinforcing steel for each foundation is also set in place at this time. Insofar as possible, the reinforcing steel is being prefabricated on jigs, spot-welded, and hauled to each tower. There is a stub angle iron in each foundation, embedded in the concrete, which is designed to fasten to the tower steel.

4. *Setting the Templates:* Some of the most efficient of the special contrivances on the job are the steel templates which are set in place on every pour. These templates are intended to maintain proper elevation and location for the stub steel for each tower.

Ray Humphreys, the first General Superintendent on the project, supervised construction of 12 of these templates. They are so designed that each side of the template can be telescoped about 10 feet, if necessary, to fit the several sizes of tower foundations. The main members of the templates are 4-inch steel pipe, with slightly smaller pipe inside these arms to permit adjustment. Drilled holes through outer and inner pipes permit heavy nails or keys to be dropped in place to hold the template steady.

The insides of the template corners are braced with welded pipe, making the frame perfectly rigid at these critical points when the thing is installed.

The template is most efficient, of course, when it can simply be dropped in position with little trouble. To make that part of it easy, Humphreys also devised small three-legged adjustable platforms which could be placed on the ground and adjusted roughly to the right elevation. On the steel-plate top of each of these platforms a small 1½-ton Duff-Norton jack is used, with a hollow top rest to encircle the pipe which makes up the template.

After making these special contrivances, Humphreys unfortunately became too sick to continue directing the job, and R. W. Drake has now taken over as General Superintendent to buzz the project through.

The templates are moved and handled with very little trouble by three Dodge 4-wheel-drive Power Wagons on the job. Each Power Wagon is equipped with a front-end winch and a stubby steel A-frame high enough to make these lifts without trouble. The templates are set in place on the jacks and adjusted to precise elevations given by a survey party; the stub steel angle iron in the foundation is bolted to similar steel members at each corner of the templates. These steel members are identical with those of the base of the tower, and with the two bolted, no movement is possible. The tower steel has to fit.

Special forming has sometimes been necessary under the templates, particularly on mountainsides where each leg of the tower is at a different elevation. In a case like this, special timbers have to be erected.

At the time the templates go in, the concrete forms are also set in place. For the square pads, which are flush with the ground, no forms are required. But the round foundations made in the auger holes have concrete pedestals in the shape of conical frustums which are above ground elevation.

To form these odd shapes, the company built up steel forms, split them in half, and made a flanged-bolted connection. They are set in place with no difficulty at all, checked for location, tied

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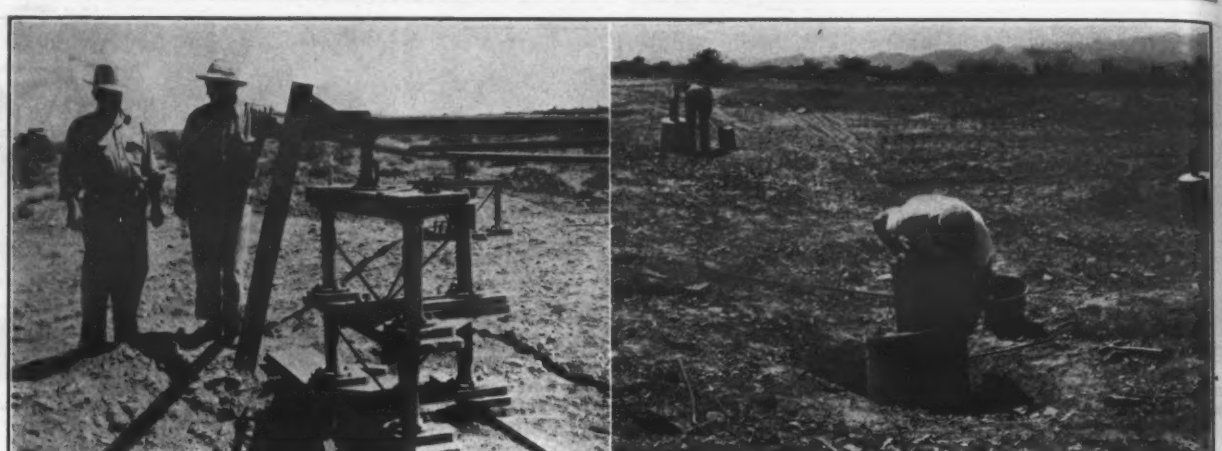

*C. & E. M. Photos*

**General Superintendent R. W. Drake (left, in the first photo) and Concrete Superintendent M. E. Hanger examine one of the special steel cone forms and template supports used on the job. Above, a workman dresses concrete on a tower footing.**


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to the steel, and are ready to pour. When the forms are stripped, men simply unbolt the flanges and pull the steel forms off. They can then be cleaned, oiled, and moved ahead.

5. *Pouring Concrete Foundations:* Concrete work has been spectacularly mobilized. The equipment which pours concrete on this job can move several miles in a day's time, make many set-ups, and move on.

The key pouring machine is a special shop-altered mobile unit mounted on a Brockway truck. It consists of a Rex 3-S concrete mixer, a 2,000-gallon mixing-water storage tank, a 105-cubic-foot Chicago Pneumatic compressor for powering vibrators, and a whole array of spare chutes and small tools needed for the work.

Traveling with this unit is a small Caterpillar D4 with a Trackson loader frame and a concrete bucket for placing the material, a 4,200-gallon truck-mounted water carrier which supplies the machine with mixing water, and a small 3-compartment rubber-mounted trailer in which a small supply of spare sand and aggregates can be carried.

"That damn trailer is one of the most important pieces of equipment on the job," explained Concrete Superintendent M. E. Hanger. "When the foundations over-run just a little bit, we need material and need it bad." As the small supply of aggregates diminishes in the spare trailer—and pea gravel is most prone to be needed—Hanger button-holes an aggregate truck as it comes by and gets filled up.

Mixing water is being hauled all the way from Boulder City, and it is likely that drinking water for the camp will have to be hauled as far as 70 miles. The town of Searchlight, Nev., invariably runs low on water every summer, so it is out as a source of supply. Farther down towards Davis Dam the truck can get in to the Colorado River, and mixing water will then be picked up from there.

The mobile mixer is spotted as close to the tower footings as possible so that it is reasonably level, and it can be reached easily by the D4. The sand and two sizes of rock are weighed on a set of Fairbanks beam scales before being dumped by wheelbarrow into the skip of the mixer. The concrete is mixed 1½ minutes, dumped to the D4-mounted concrete bucket, and taken over to the pours. A Mall vibrator is being used to consolidate the concrete at a 1½-inch slump around the steel reinforcement.

This is a Bureau of Reclamation job, so the concrete is not being poured. It is "placed". Nobody ever forgets that small detail on a USBR project—least of all the concrete gang.

There will, of course, be one or two of those individual exceptions to the rule on this job—they make high-line work interesting every day. One of the towers is in a place so hard to get to that the little "Cat" will have to haul concrete about ¼ mile, or perhaps more. That one is likely to take a shift to pour, but it is the only way to get in to it. The crew had to excavate the footings by hand.

The day following the pour, steel forms are stripped, the concrete is dressed and rubbed down if necessary, and white Hunt Process curing solution is applied with a whitewash brush to cure the concrete. One concrete finisher, 22-year-old Ernest Newman of Las Vegas, is taking care of all the finishing in 8 hours. Genial, good-natured, and unusually conscious of craftsmanship, this lad is considered so capable by Concrete Superintendent Hanger that he made a point of mentioning him by name.

6. *Backfill and Leveling:* After the concrete work is done, a Caterpillar D8 or a No. 12 Caterpillar motor grader passes by, backfills around the foundations, distributes the loose dirt and rock, and leaves the area under the towers smooth and well drained.

Close on the heels of this operation come the trucks which carry the tower steel out to the job. A K-8 International truck hauls one tower at a trip; another K-8 with a 30-foot low-bed trailer hauls two. These are then distributed at each location.

7. *Erection of Towers:* The steel for the towers will be assembled in sections on the ground by a skilled erection crew. Then the sections will be hoisted up and set in place by two truck cranes on the job: a Link-Belt Speeder and a Bay City, both machines with 110-foot booms. Where they can't go, basket poles will gin the sections up.

That will complete the work. Now that the job is well organized and making rapid headway, the operations will all stay as close together as possible so the men can finish up as they go, and move rapidly through the country together.

### Personnel

Construction of the new line comes under the general supervision of L. N. McClellan, Chief Engineer of the USBR at Denver, and E. A. Moritz, Regional Director at Boulder City. Sam McWilliams at Phoenix is in direct charge of the project at Construction Engineer's level, assisted by Dan Murphy at the sub-office in Kingman, Ariz.

Completion of Davis Dam hydroelectric facilities, plus ever-increasing refinements in the regulation of the Colorado River water and power output, will send electric power to those communities in Arizona, southern Nevada, and southern California which now can use it.

## Manages Mack L. I. Branch

A veteran Mack employee, Charles F. Dedon, who started with the company in 1918 as a clerk, has been made Manager of the Mack Truck Co.'s Mineola direct factory branch, L. I., N. Y.

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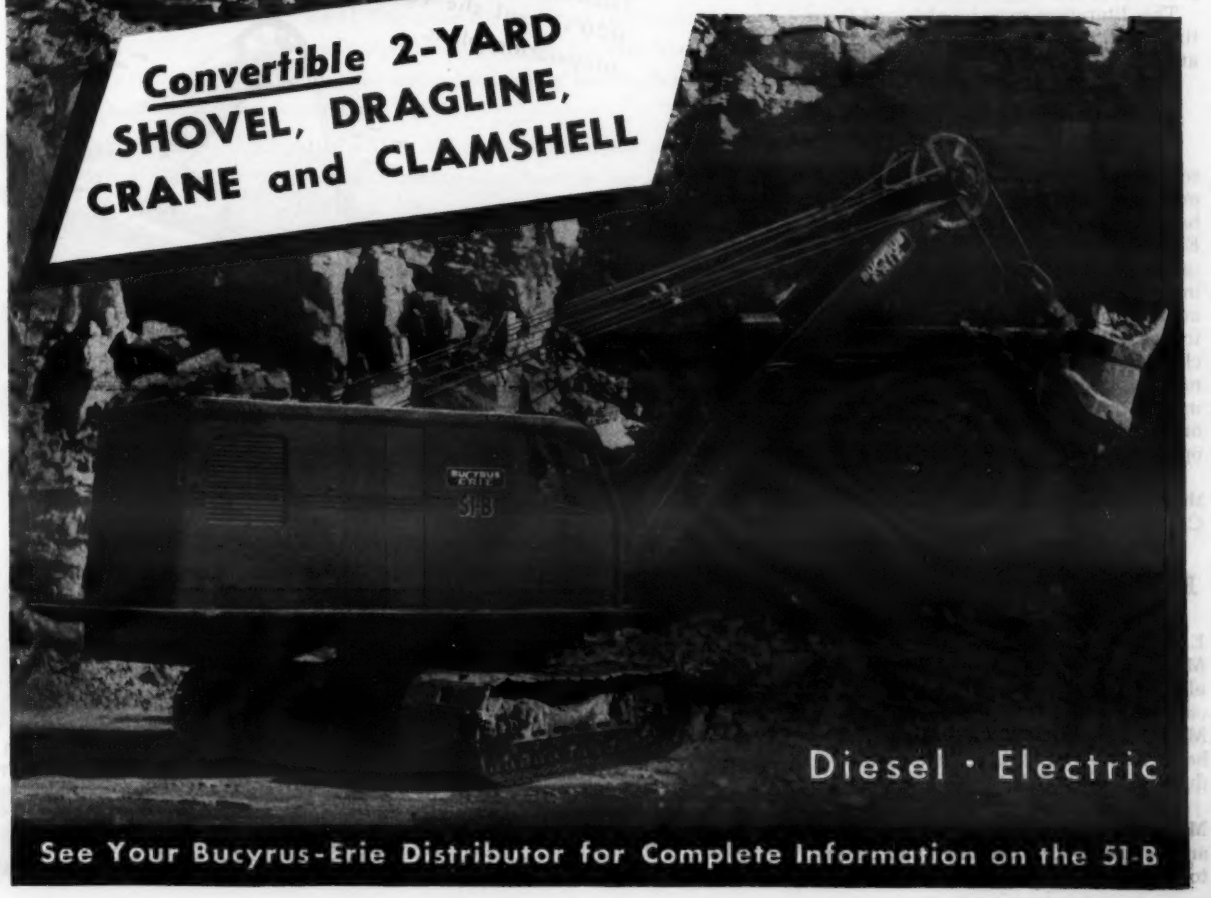
# A New Star in the Excavating Field

*Another Output Leader in the Bucyrus-Erie Line— the Fast, Smooth, Powerful*

**51-B**

**Convertible 2-YARD SHOVEL, DRAGLINE, CRANE and CLAMSHELL**




See Your Bucyrus-Erie Distributor for Complete Information on the 51-B

Here's an entirely new 2-yard excavator — the Bucyrus-Erie 51-B! It features the sturdy yet lightweight construction, fast operating speed, simple "full-feel" controls and proven design that mean sustained high output with outstanding economy of operation. It's versatile, too . . . functions with top efficiency as shovel, dragline, crane or clamshell, and has been thoroughly proved in extensive field tests.

Among the 51-B's many important features are wide use of special alloy steels, selectively hardened for strength and long life and anti-friction bearings to minimize power loss and insure concentricity of rotating parts. Clutches of generous size, requiring no adjustment for weather or temperature variations, provide smooth fast action with high operator efficiency. Twin-rope crowd for shovel operation increases digging stability, speed and output while reducing shocks or vibrations and cutting maintenance costs. Independently operated power boom hoist with power controlled cushioned lowering is standard equipment for precision crane work. These and dozens of other design features make the 51-B a worthy addition to the Bucyrus-Erie line, already world famous for dependable operation and tops for output. Your Bucyrus-Erie distributor has full details — see him today!

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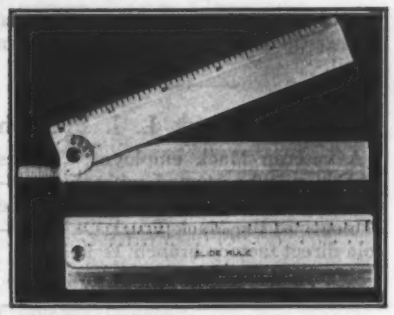

The Versi-Rule is a six-in-one engineering tool—it can serve as slide rule, beveled ruler, triangle, depth gage, square, and protractor.

## Pocket Rule Gives Six Units in One

Six useful engineering tools have been incorporated in one compact unit by Dall, Inc., 720 Washington Ave., S. E., Minneapolis 14, Minn. The Versi-Rule can be used as a slide rule, beveled ruler, triangle, depth gage, square, and protractor.

Distinctive features include machine-graduated fractional and decimal scales with fine-beveled ruling edges, adjustable pivot friction joint, and raised inking edge. The tool operates with T-square and beveled edges lying flat for all positions of rule. Made of lightweight aluminum-alloy construction with a durable finish, this handy pocket tool measures 5⅜ x 1¼ x ⅛ inches closed.

To meet varied engineering requirements, the Versi-Rule is available in two other models. The Senior includes all features of the Master model except the slide rule. The Standard includes all features except the slide rule and depth gage.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 31.

## Catalog on Oil-Burner Tar and Asphalt Kettles

A 10-page folder describing oil-burner tar and asphalt kettles may be secured from The Macleod Co., 2232 Bogen St., Cincinnati 22, Ohio. It gives complete specifications for the company's line of kettles, which range in size up to 800 gallons. The bulletin, No. 309-B, also presents a series of surface heaters, tool heaters, air-pressure distributors, sandblast hose machines, and paint sprayers.

This literature may be obtained from the company. Or use the Request Card at page 16. Circle No. 73.

## Arc-Welding Accessories

A new 20-page catalog containing descriptions, specifications, and prices of more than 150 arc-welding accessories has been announced by the General Electric Co., Schenectady 5, N. Y. Designated GEC-253A, the new bulletin includes information on electrode holders, helmets and goggles, tungsten electrodes, all types of protective aids and clothing, electrode carriers, cable connectors, ground clamps, brushes, cleaning tools, fillet weld gage, and many other accessories for the arc-welding operator.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 7.

## Ray McLean Heads Jaeger

Ray McLean, for the past four years Executive Vice President of The Jaeger Machine Co., Columbus, Ohio, was elected President at the company's recent annual meeting. He succeeds O. G. Mandt, with whom he has for some time been sharing executive responsibilities due to the latter's impaired health.

Mr. McLean joined Jaeger in 1939 as Manager of its Truck-Mixer Division and became a Vice President and Director in 1942. He is currently a Director of the Construction Industries Association and has also served two terms as a Director of The National Ready-Mixed Concrete Association.

## Canvas Products Give All-Weather Protection

A circular describing a full line of canvas products for use with construction equipment is offered by the Eveready Canvas Corp., 254 Pearl St., New York 7, N. Y. Tarpaulins, truck covers, instrument covers, welding curtains, shelters, windbreaks, and deck flashing are some of the products manufactured by the company.

The name Ecco-Tite designates the impregnated waterproofing seal on these products. Plain or flameproofed canvas may also be obtained, and special canvas products will be made to suit individual requirements when necessary.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 37.


Van Dorn POWER helps you SAW 10 TIMES FASTER!

Speedy Van Dorn Electric "Quick-Saws"* beat hand sawing 10 to 1! Rip, crosscut, miter, dado; in wood, compo-board, tile, galvanized sheet, etc. Easy adjustment for angle and depth of cut. Completely safe. Easy to handle. Models for cutting to depths of 2⅜", 2⅝", 3⅛". See your nearby Van Dorn Distributor. Write for catalog to: THE VAN DORN ELECTRIC TOOL CO., 787 Joppa Road, Towson 4, Maryland.

*Trade Mark Reg. U. S. Pat. Off.

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(DIV. OF BLACK & DECKER MFG. CO.)

"Best Transmission we ever had..."

So says Pierce Wright, head mechanic at Central Indiana Coal Company's Maid Marian Mine, Odon, Indiana.

Mr. Wright's words of wisdom refer to Fuller 5-A-920 Transmissions in five of Maid Marian's eight Fuller-equipped 25-ton Euclid bottom dump trucks hauling raw coal from the pit to the tipple . . . an average of 17 to 18 round trips per seven-hour day. Two additional 15-ton rear dump Euclids, also equipped with Model 5-A-920's, haul the refuse away from the preparation plant.

Five forward speeds, an overdrive in fifth, and one reverse are provided by the Fuller's Model 5-A-920, which is designed for straight and tractor-type trucks utilizing engines up to 920 inches. The application of either two or three-speed Fuller auxiliaries provides the widest opportunity for transmission of power, gear splitting and maximum vehicle speeds.

For maximum economy in weight and space . . . for short, easy shifts, specify Fuller. You'll agree that it's the best transmission *you* ever had.

FULLER MANUFACTURING COMPANY (Transmission Division), KALAMAZOO 13F, MICHIGAN

Unit Drop Forge Division, Milwaukee 1, Wis. • WESTERN DISTRICT OFFICE (SALES & SERVICE—BOTH DIVISIONS), 1060 E. 11th Street, Oakland 6, Calif.

## Front-End Spreader

The new Roadsaver spreader developed by the Gabb Mfg. Co., 16 Orchard St., East Hartford 8, Conn., places surfacing material ahead of the carrying truck. Mounted on any standard make of dump truck, it spreads sand, chip stone, or rock in widths from 4 to 20 feet.

The unit operates in a forward direction at all times at a speed governed largely by the safety of the men working on the road; the machine itself can spread over one cubic yard per minute, the company says. All controls for width, density, and uniformity of spreading are easily accessible at the operator's platform. The hopper, which guides the material onto the belt from the rear of the truck, is adjustable to accommodate any length of truck. All operations are in full view of the truck driver and the operator.

A 20-hp 4-cylinder air-cooled engine affords independent power. Variable speed control plus separate controls for deflector plates permit predetermined placement of material from the spinner disk. Adjustable gage boards may be used in spreading operations. A hydraulic jack and hand pump lift the machine for attachment to the truck or detachment. Empty trucks back off the Roadsaver to be replaced by a loaded truck. The change-over averages 1½ minutes, according to the manufacturer.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 150.

## Portable Hand Winch

A broadside describing a ¾-ton-capacity portable hand-powered winch has just been issued by the Gold Foundry & Machine Works, 1618 S. Osage St., Independence, Mo. Geared at 8.16 to 1 and 3 to 1 ratios, the winch may be bolted anywhere and used for a variety of moving and hoisting jobs. It is 12½ x 7½ x 7 inches, has a drum 6 inches long with 6-inch flanges, and carries a ¼-inch wire rope. Specifications, features, applications, and prices are included in the folder.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 20.

## Rotary Tractor Sweepers

A descriptive specification sheet on the Little Giant rotary sweeper for Oliver 60 and Oliver 70 industrial tractors is available from Little Giant Products, Inc., 1530 N. Adams St., Peoria 3, Ill.

The sweeper is furnished in 5, 6, and 7-foot lengths, and has a palmyra fiber brush 32 inches in diameter. One man can attach, detach, and operate this sweeper on the front-end power take-off of the tractor. Complete specifications and operation features are listed in the release.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 111.

## Concrete Expressways

Expressways, with their grade separations and limited access, have become an economic necessity as well as an essential factor in the safe movement of heavy volumes of motor vehicles. The latest bulletin prepared by the Portland Cement Association, 33 W. Grand Ave., Chicago 10, Ill., illustrates this modern solution to the problem of traffic congestion and safety. Photographs of some of the nation's outstanding expressways show how they lessen the possibility of accident, speed travel, and aid in the orderly development of the community.

This literature may be obtained from the Association, or by using the Request Card at page 16. Circle No. 32.

The Roadsaver surface-material spreader operates ahead of the carrying truck. The surfacing material is brought forward underneath the truck by a conveyor belt.

## Uniform-Concrete Control Requires Proper Batching

A bulletin explaining how scientific mix design perfected in the concrete laboratory can be reproduced on the job is available from the Scientific Concrete Service Corp., 724 Salem Ave., Elizabeth 3, N. J. The solution to the problem of obtaining uniform and dependable concrete in the field, the pamphlet explains, is modern scientifically designed precision batching equipment. It describes the installation of control devices which usually consist of three Toledo scales to test for moisture content of aggregates, and to weigh aggregates, water, and cement to a tolerance of ¼ per cent.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 83.

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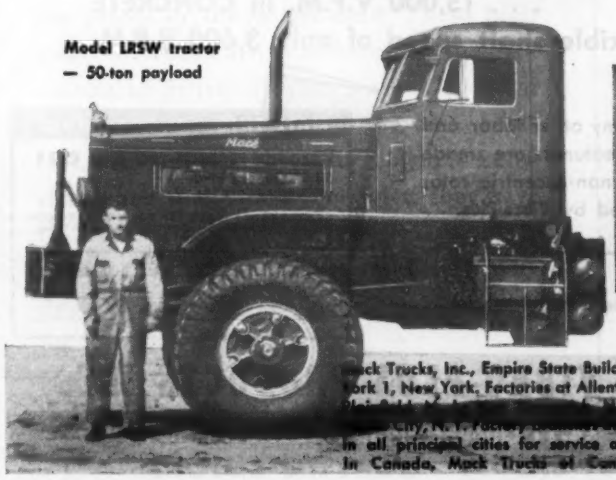
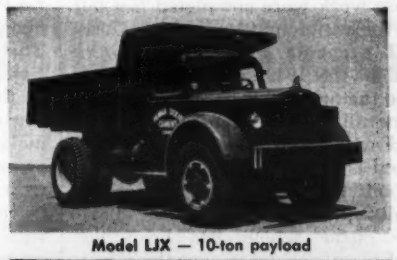


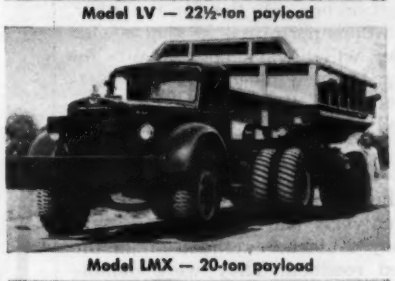
Model LRSW tractor — 50-ton payload



Model LJX — 10-ton payload

Model LMSW-M — 15-ton payload

Model LV — 22½-ton payload



Model LMX — 20-ton payload

Model LRSW — 30-ton payload

Model LR — 32-ton, bottom-dump coal hauler

Mack Trucks, Inc., Empire State Building, New York 1, New York. Factories at Allentown, Pa., Jersey City, N. J., Factory Branches and Dealers in all principal cities for service and parts. In Canada, Mack Trucks of Canada, Ltd.

# Old Road Is Widened, Topped With Hot-Mix

## Gravel for Pavement and Shoulders Processed at Job Crushing Plant; New Location Skips Curves

✦ A 4.9-MILE stretch of U. S. 7, the Burlington-Rutland Road, in northwestern Vermont has been reconstructed in the town of Charlotte. Work began in the latter part of September, 1948, after the Vermont Department of Highways awarded a contract for the improvement to W. H. Hinman, Inc., of North Anson, Maine, on a low bid of $254,750.80.

The existing road, a 20-year-old concrete pavement 18 feet wide, was not disturbed, but was widened 2 feet on each side. A new bituminous-concrete pavement was then laid to a width of 22 feet. Grading, drainage, and sub-base work were completed last fall before the winter put an end to operations. The paving and shoulders were finished in the 1949 season.

While the original concrete pavement was generally in bad shape and liberally patched with cold-mix, the alignment was good on the whole, except for one spot about midway of the project. At this point the highway made a sharp reverse curve which has been the scene of many accidents over the years. The curves have been eliminated by relocating a 1,600-foot section of the road along a sidehill down into the valley. This change in alignment required a 16-foot maximum fill with a resultant large yardage in borrow, even though there is a surplus of material on either side of the relocation.

One of the major operations that was carried on during the 1948 construction season was the crushing and screening of gravel at a pit near the job, to supply aggregate for the hot-mix paving and a pre-mix course of cut-back asphalt and gravel for the new shoulders. The original 3-foot width of shoulders was extended in this contract, wherever possible, to 5 feet. Sections of the widened shoulders, 800 feet long, were staggered along the highway first on one side then on the other, as conditions permitted, so that a wide shoulder will always be available for parking. In a few places where there is sufficient room, the shoulders are even widened to 8 feet.

### Grading and Drainage

All the concrete headwalls on the existing culverts had to be removed so that they could be extended under the widened roadbed. They were demolished with a jackhammer powered by a small air compressor carried on a truck. Four concrete box culverts were lengthened on both sides, and over 2,000 linear feet of new pipe was also installed. About half of this pipe item was reinforced-concrete culvert pipe in 18 to 30-inch-diameter sizes, while the remainder was corrugated-metal pipe for driveways, 12 to 36 inches in diameter.

In order to complete the roadway grading by the end of the 1948 construction season, the contractor put three shovels to work excavating along the sides of the existing pavement for the widening of the shoulders. The shovels were all Bucyrus-Erie models —¾, ½, and ⅜ yard in size. They excavated enough from the shoulders so that the entire newly extended width could be backfilled with 12 inches of gravel. The gravel backfill served as a base for the 3-inch course of pre-mix material that went on top of the shoulders. The shoulders slope towards the ditch at the rate of ½ inch to 12. In fills the side slopes are either 4 to 1 or 2 to 1, while the cut slopes are all 2 to 1.

As the shoulders were dug out, the material was loaded into a fleet of trucks. Grading started in the new location at the center of the job and worked both ways. The 1,600-foot relocated section absorbed all the dirt taken from the adjoining cuts, and also additional borrow to complete the embankment. The fill was placed in 12-inch lifts and spread by a pair of International TD-9 tractor-dozers. The passage of the trucks and dozers over the fill resulted in good compaction.

### Gravel From Borrow Pit

The cuts for the shoulder excavation were backfilled with gravel 12 to 18 inches deep, and gravel was also used to complete the embankment in the relocation section. A good grade of gravel was obtained from a pit on the La Platte River, north of Charlotte and about a 5-mile average haul to the job. The material was dug out by a Link-Belt Speeder ¾-yard shovel and hauled to the road in trucks. The truck fleet consisted of 28 vehicles of assorted makes and capacities; 10 of them were owned by the contractor and the rest were rented by the hour. The contractor's trucks were generally used with the shovels on the roadway excavation, while the hired trucks hauled gravel.

In order to cause the minimum delay to traffic during the widening operations, only one side of the road was opened up at a time. The holes were also backfilled as speedily as possible. The trucks end-dumped the gravel, and an Adams motor grader leveled it off. The grader also shaped the sub-base in the new fill section.

*C. & E. M. Photo*
**A Bucyrus-Erie 22-B ¾-yard shovel excavates along the sides of U. S. 7 in Vermont for shoulder widening, and loads the material into a truck.**

Another gravel pit, of somewhat finer material, was also opened up on the banks of the La Platte about ½ mile from the first pit. The second pit supplied the material necessary for the bituminous-concrete pavement and for the pre-mix shoulder course. The 2½-inch pavement is made up of two courses—a 1½-inch binder and a 1-inch surface. The maximum aggregate in the binder is ¾ inch, and in the surface

*(Concluded on next page)*

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course, ½ inch. For the pre-mix shoulders, the gravel is from 1½-inch size down. These various sizes of gravel were all obtained from this pit by processing the material during the fall of 1948 and stockpiling it for use in the spring. When all the gravel had been crushed and screened for this job, the contractor moved his plant to another contract in that section of Vermont to perform a similar task.

### Crushing Plant

Gravel processing was done with a Pioneer No. 46 VE duplex crushing plant that was powered through a belt drive by a Murphy 135-hp diesel engine. The diesel also operated an Electric Machinery Co. generator that supplied the current for the motors running the plant conveyors. Only one size of material was made at a time; the different sizes were obtained simply by shifting the screens.

From a high bank of gravel, an International TD-18 tractor-dozer pushed the material into a receiving hopper with a feeder at the bottom. The feeder moved the gravel along to a 50-foot conveyor with a 30-inch belt that sloped gradually upward to a No. 4 sand screen on top of an 8 x 32 jaw crusher. Material passing the sand screen dropped onto a 50-foot conveyor that lifted the sand up to a 21-cubic-yard hopper bin off to one side of the plant. The gravel that was retained on the No. 4 screen dropped into the jaw crusher. After going through the crusher, the gravel emerged onto a 30-foot conveyor at the end of which the aggregate spilled over onto a 40-foot conveyor running in the opposite direction, but attaining a higher level.

These two conveyors returned the gravel to the top of the plant where it dropped onto another screen. If, for instance, ½-inch gravel was being made for the pavement surface course, a ½-inch screen would be located above the 40-inch roll crusher. Material passing the screen moved out the side on a 50-foot conveyor to another 21-yard hopper bin, similar to the sand-storage bin on the opposite side of the plant. Gravel not passing the screen dropped into the roll crusher for further treatment. The different sizes required were thus collected in the bins and then stockpiled around the plant.

### Hot-Mix Pavement

Last spring an asphalt plant was set up at the site of the crusher, and bituminous concrete was mixed for both the bottom and top courses of the pavement. The gradation of material for the binder and surface courses was:

| Sieve Size | Per Cent Passing Binder | Surface |
|---|---|---|
| 1-inch | 100 | .... |
| ¾-inch | 95-100 | .... |
| ½-inch | 30-60 | 100 |
| ⅜-inch | .... | 61-92 |
| No. 4 | 20-45 | 46-84 |
| No. 10 | 15-30 | 24-75 |
| No. 40 | .. | 19-53 |
| No. 80 | .... | 10-26 |
| No. 200 | .... | 5-8 |
| Total aggregate | 94-96 | 92-94 |
| Bitumen | 4-6 | 6-8 |

Before the pavement was laid, any cold-patches remaining on the old concrete were scraped off with the grader blade. Then the 1½-inch binder course was machine-laid, followed by the 1-inch surface course. The 22-foot-wide pavement has a crown at the rate of 1 inch in 9 feet.

The 3-inch bituminous-gravel course for the shoulders was a Durfee mix; that is, the cut-back asphalt was sprayed on a pile of 1½-inch gravel as a power shovel mixed the two materials together. Trucks hauled both the shoulder mix and the plant-mix to the road, an average distance of 5 miles.

### Quantities and Personnel

The major items in the 4.9-mile highway contract included the following:

| | |
|---|---|
| Common excavation | 39,200 gals. |
| Gravel, sub-base and shoulders | 33,800 cu. yds. |
| Bituminous-concrete pavement | 24,380 cu. yds. |
| Bitumen | 10,600 tons |
| Concrete for culverts | 154 cu. yds. |
| Reinforcing steel | 15,450 lbs. |

W. H. Hinman, Inc., employed an average force of 80 men on the contract under Nicholas Depasy, Superintendent.

For the Vermont Department of Highways, Rod J. Maynes was Resident Engineer, assisted by R. C. Wright. The Department is headed by F. Richard Bradley, Commissioner. Hubert E. Sargent is Chief Engineer. H. W. Marsett is Highway Engineer, and F. C. Coates is Construction Engineer.

*C. & E. M. Photo*

**Gravel for the hot-mix part of Hinman's contract was crushed at this Pioneer No. 46 VE duplex crushing plant. The Murphy diesel engine that powered it is shown at the right. In the foreground is the sand bin.**


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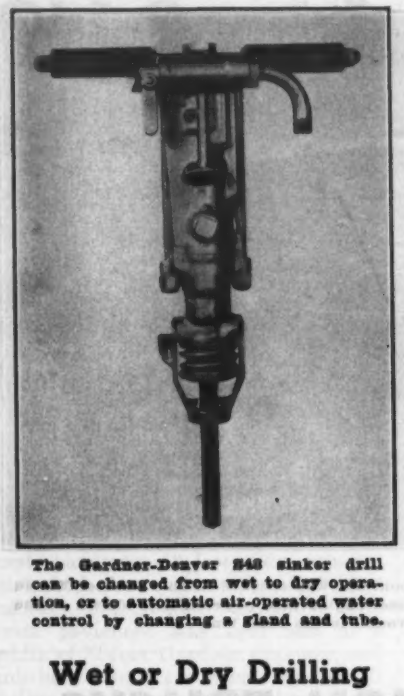


The Gardner-Denver S48 sinker drill can be changed from wet to dry operation, or to automatic air-operated water control by changing a gland and tube.

## Wet or Dry Drilling

A new 45-pound-class sinker drill has recently been announced by Gardner-Denver Co., Quincy, Ill. Known as the S48, this sinker is said to have drilling, rotating, and hole-cleaning characteristics that make it especially suitable for use with modern tungsten-carbide rock bits.

The S48 can be changed from wet to dry or to automatic air-operated water control by changing an easily removed gland and tube. The conversion is made without taking the drill apart. An improved steel puller on the S48 has no nuts to work loose and can be swung clear of the chuck when desired. The water connection swivels freely, yet is said to have a leak-proof water seal. The air-cleaning screen is designed to clean itself during blowing.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 43.

## New Curing Blanket

An improved curing blanket, for all types of concrete paving, has been announced by Union Bag & Paper Corp., Woolworth Bldg., 10 Park Place, New York 7, N. Y. These Scutan blankets meet all requirements of the National Bureau of Standards' present UU-P264 concrete-curing specifications, including the proposed changes, the company says. Scutan is supplied in rolls 12 feet wide, to cover an entire traffic lane.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 2.

## Truck-Tractor Spex

A complete specification sheet has been released on the rubber-tired tractor manufactured by The Brockway Tractor Co., Northfield and Krick Roads, Bedford, Ohio. This tractor features a 3-point hook-up for standard mounted implements and has a speed range of 2.2 to 18 mph, with a reverse speed of 3.0 mph. Its power take-off can be used for operating stationary equipment.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 74.

## Sandblasting Equipment

Literature describing sandblasting machines and equipment is offered by the Sanstorm Mfg. Co., P. O. Box 1173, Fresno, Calif. The sandblasting machines are available in a variety of portable and stationary models for both wet and dry handling. Standard equipment includes the necessary length of hose, a nozzle, a nozzle holder, and a filling funnel. These machines handle capacities up to 650 pounds of sand and 1,625 pounds of steel grit. Nozzle orifice sizes are 3/16, ¼, 5/16, and ⅜ inch.

The catalog sheets fully describe the machines and their operations, and list data and specifications for selecting the proper machine for each job. Photographs and drawings illustrate the unit's features and operation. A bulletin on the Sanstorm blast cleaning cabinets, designed to use any abrasive required for cleaning ferrous and non-ferrous metals, castings, forgings, engine parts, heat-treated articles, and materials to be metallized, may also be obtained.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 24.

## Lubricant Sales in Ill.

The D-A Lubricant Co., Inc., Indianapolis manufacturer of heavy-duty lubricants and engine oils, has appointed Robert C. McColgin sales and service representative for the southern Illinois territory. He will work out of Springfield, Ill.

## Bulletin on Proceedings Of Highway Short Course

The proceedings of the 23rd Annual Short Course in Highway Engineering have been published by the School of Engineering of the Agricultural and Mechanical College of Texas, which sponsors the annual meeting in cooperation with the Texas Highway Department. To obtain a copy of Bulletin No. 112, write to the School of Engineering at the college, College Station, Texas, and mention this magazine.


A MIXER built for ASPHALT!

YOU can't mix asphalt like concrete. It takes better equipment to accurately proportion and mix asphalt. The Foote Kinetic Mixer is especially designed and built for asphalt, and is not comparable in any way with the ordinary concrete mixer. It provides a mulling action. Asphalt is pumped between and within the aggregate layers assuring complete coating of every particle of aggregate without waste of asphalt. This means 8 to 10 batches more out of every barrel of asphalt. Capacity is 3 cu. ft. in 30 seconds. Ask for Bulletin K-100.

the FOOTE Kinetic mixer

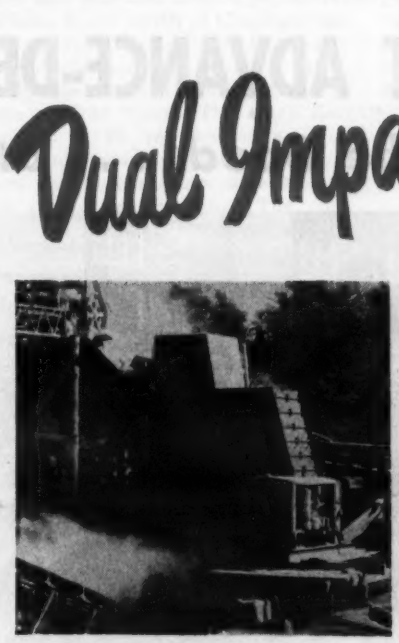
THE FOOTE CO., INC.

1916 State St. • Nunda, New York

A BLAW-KNOX PRODUCT

Dual Impact Action does it again!

And again! And again!



...In Georgia

Lambert Brothers now operates a New Holland Model 5050 in northern Georgia. This breaker accepts rock up to 50", produces clean, cubical aggregate passing minus 4" in one operation. "The ability of this breaker . . . is remarkable."

...In Ohio

Early in 1947, Hudson Stone Products Company, Lynchburg, Ohio, modernized their plant, replacing three units with a *single* New Holland Model 3030 Double Impeller Breaker. Tom Hudson, owner, says: "Crush more material to desired size with less power . . . "

...In Washington

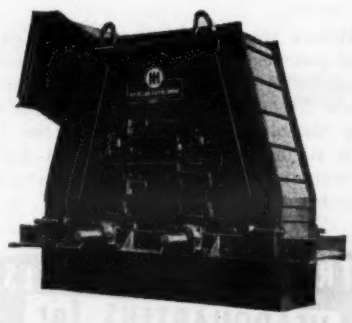
"They are feeding quarry run rock 12-14 inches," says Alex Ainlay speaking of the Inland Asphalt Co., Spokane, Wash. "The material is basalt. They produce ¾", ½", and ¼" material with a Model 3030 at the rate of 100 yds. per hr."

RIGHT—across the country

Wherever you go . . . you'll find the four models of the New Holland Double Impeller Breakers—1212's, 2020's, 3030's, 5050's doing a job. Working in gravel, coral, limestone, other types of rock. Making a name for themselves—everywhere.

The New Holland Double Impeller Breaker is all-steel construction—built to take it—to do a job at a profit. They give maximum trouble-free service—operate on minimum power. Mounted on I-beams to simplify installation.

**Whatever your crushing problems**—take them up with New Holland engineers. No obligation, of course. Write department C-119 for full information—literature—name of distributor—location of nearest installation.



NEW HOLLAND DOUBLE IMPELLER BREAKERS

NEW HOLLAND MANUFACTURING COMPANY, MOUNTVILLE, PA.

Affiliate of The Sperry Corp.

Sonotube fiber forms were used by Moore Construction Co. for column work on a pavilion at Myrtle Beach, S. C. This photo shows two of the 12-inch-diameter columns, one before stripping, the other after the forms have been removed.

## Tubular Fiber Forms

A practical laminated and impregnated fiber tubing has been developed by the Sonoco Products Co. of Hartsville, S. C., for use in forming piers, columns, piles, culverts, storm sewers, etc. Sonotubes are prefabricated in 18 sizes ranging from 3 to 24 inches ID. For one-time use only, they are designed to save lumber, labor, time, and cost in the construction of concrete forms.

Columns ranging from 10 to 21 feet in height and carrying heavy loads have been made with Sonotubes, but they are capable of greater heights, according to the manufacturer. Steel beams, or braces, or other reinforcing can be set in before pouring or placed in position after pouring. Features claimed for fiber Sonotube are light weight, minimum of bracing, and easy "tailoring". They may be cut as readily as wood, Sonoco points out, and they can be stripped off easily within 24 hours or allowed to slough off with time.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 45.

## Light Machine Tools

A new 16-page catalog has recently been issued by the Walker-Turner Division, Kearney & Trecker Corp., Plainfield, N. J., illustrating the line of small tools made by this company. Four of the latest models, cataloged for the first time: a 12-inch band saw, a 6-inch jointer, an 8-inch tilting table saw, and a 9-inch tilting arbor saw are included. Complete specifications and descriptions of each machine are given.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 146.

## Transporting Equipment

A circular describing Ferguson Lowboy trailers for heavy-duty equipment hauling has been issued by the Shovel Supply Co., P. O. Box 1369, Dallas 1, Texas. Made in three sizes—20, 30, and 50-ton capacities—the special construction maintains a low center of gravity and permits the frame of the equipment being transported to ride directly on the Lowboy frame.

The catalog sheet points out that the rear-wheel assembly is detached by simply releasing two locking pins. A walking beam arrangement equalizes the weight distribution and allows the wheels to follow ground undulations independently, the company says. Complete specifications and photographs are included.

This literature may be obtained from the company, or by using the Request Card at page 16. Type and weight of equipment to be handled should accompany requests. Circle No. 95.

## U. S. Rubber Changes

William T. Keenan has retired as District Sales Manager, Chicago branch, Mechanical Goods Division, U. S. Rubber Co. He had been with the company for 39 years. Joseph A. Conlon, formerly Assistant District Sales Manager, succeeds him.

## Air Unit Provides Flow For Pulverized Materials

Two new bulletins giving information, specifications, and prices on Bin-Flo aerator units have been issued by the Bin-Dicator Co., Dept. F-605, 13946 Kercheval Ave., Detroit 15, Mich. These units are designed to provide a simple means of injecting small volumes of low-pressure air into pulverized materials which do not flow readily from bins, hoppers, and chutes.

One of the bulletins gives complete information on the operation and use of Bin-Flo aerator units, including typical layouts, applications, and air-supply data. The other gives the detailed specifications and prices.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 3.


**Stormy Weather!**

*When it rains you can't wait to experiment with untried tarps. You can depend on ECCO tarpaulins when you need them. Hundreds of other builders and contractors have used ECCO tarps for many years.*

ECCO

- Seals out wind, rain and snow
- Big 2-inch hems and double-sewn seams
- Rustproof grommets and long tie ropes
- Economical, give years of service
- Immediate delivery

*Write for prices on your requirements*

**Eveready Canvas Corp.**

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Phone: Bowling Green 9-5990



"CHAMPION"

4½ cu. ft. Contractor Size

WHEELBARROW

NO. 460 C-R

DISTRIBUTOR TERRITORY AVAILABLE

CHAMPION WHEELBARROW CO.

P. O. BOX 138 ● BYRON CENTER, MICH.

**ROADSIDE REPORT** *by H. Petrey of Arlington, Texas. Ford Model F-8 shown has a G.T.W. rating of 39,000 lbs. as a tractor. G.V.W. rating is 21,500 lbs.*

**"My FORD moves this equipment 10 miles faster than 5 other makes I tried!"**

"RECENTLY I purchased a Ford F-8 to haul a 50,000 lb. crane from job to job," reports H. Petrey of Arlington, Texas. "I must say this 145-horsepower Ford F-8 is the King of them all. It moves this equipment 10 miles faster and safer than the 5 different trucks of other makes that I have tried, to date. I am real proud of this BIG JOB."

In terms of *Payload-Performance* the Ford BIG JOBS have no equal in their class. No other truck offers so much payload capacity in relation to chassis weight with as high a horsepower rating per gross ton. This means bigger payloads within legal load limits. It means faster, more profitable delivery of big loads. Ford's high *Payload-Performance* is evidence of Bonus Built construction. Each of over 150 Ford Truck models is Bonus Built... built extra strong to last longer.

*BONUS: *"Something given in addition to what is usual or strictly due"—Webster*

FORD 1949 Bonus* Built TRUCKS 1955

*BUILT STRONGER TO LAST LONGER*

USING LATEST REGISTRATION DATA ON 6,106,000 TRUCKS, LIFE INSURANCE EXPERTS PROVE FORD TRUCKS LAST LONGER!

**ONLY THE FORD BIG JOB HAS ALL THESE FEATURES**

- ★ New 145-h.p. Ford V-8 engine for top performance.
- ★ Ford concentric dual-throat carburetor for more power, more economy.
- ★ Big Ford power-operated hydraulic brakes; front 16-inch by 2¼-inch; rear 15-inch by 5-inch double cylinder on F-7, 16-inch by 5-inch double cylinder on F-8. Air brakes also available for F-8.
- ★ New heavy duty 5-speed transmissions—overdrive or direct-in-fifth—for operating flexibility.
- ★ Ford Super Quadrex single speed axles; two-speed axle available in Model F-8.
- ★ Large diameter (10-inch) wheel bolt circle with 8 studs to allow for extra-strong hub construction.
- ★ Million Dollar Cab with Ford Level Action suspension for greater driving comfort.
- ★ Nationwide service from over 6,400 Ford Dealers.
- ★ Ford Bonus Built construction for long truck life.

Gross Vehicle Weight Ratings: F-8 up to 21,500 lbs., F-7 up to 19,000 lbs. Gross Combination ratings: F-8 up to 39,000 lbs., F-7 up to 35,000 lbs.

The new Rogers tilt-deck trailer has a capacity of 7 tons. A double-acting ram cushions the deck when it is being raised or lowered.

## Tilt-Deck Trailer

A new tilt-deck trailer has recently been announced by Rogers Bros. Corp. of Albion, Pa. It carries four 14-ply 8:25 x 15 tires and has a capacity of 7 tons. Its road clearance is 16 inches. Its deck is 16 x 8 feet and 34 inches high. Air or vacuum brakes are optional. The trailer features a double-acting hydraulic ram which cushions the deck when it is being raised or lowered. A 5-ton trailer is also available equipped with 10-ply 7:50 x 15 tires.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 64.

## Transmission Belting

A new 28-page catalog issued by the Mechanical Goods Division, United States Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y., gives detailed design and engineering and performance data for its line of transmission belting.

Tables on belt speeds, arc of contact, friction, horsepower correction, and service factors are included in the manual, together with hints on the proper selection of a belt and the procedure for analyzing belt drives.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 9.

## Electric Hammer and Drill

Insert sheets describing the Wodack portable electric tool, a combination hammer and drill, are available from the Wodack Electric Tool Corp., 4633 W. Huron St., Chicago 44, Ill. The Do-All tool utilizes one motor for drilling concrete and masonry; drilling metal and wood; and driving, grinding, buffing, and wire-wheel work. Complete specifications and prices are given for the tool and its varied accessory equipment.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 133.

## Motor-Scraper Literature

Two catalogs have recently been released by LaPlant-Choate Mfg. Co., Inc., 2830 First Ave., Cedar Rapids, Iowa. The first, a 17 x 22-inch two-color broadside, describes the TS300 motor scraper. In addition to listing complete specifications, it covers scraper features under the headings of loading, hauling, spreading, and servicing. On-the-job photos illustrate these features.

The second catalog, a 4-page folder, describes all improvements and original features now available in the TS300. Case histories of actual jobs showing hours worked, yards hauled, etc., are also included.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 33.

## Open House for Ceco

The Ceco Steel Products Corp., manufacturer of steel forms, celebrated its 30th year in Cicero, Ill., with an open house at the Cicero plant.

The guests, families, and friends of Ceco employees saw the plant in operation and toured the offices where displays graphically represented the function of each department. The plan for the open house grew out of requests by employees for permission to show their families where they work and what they do.

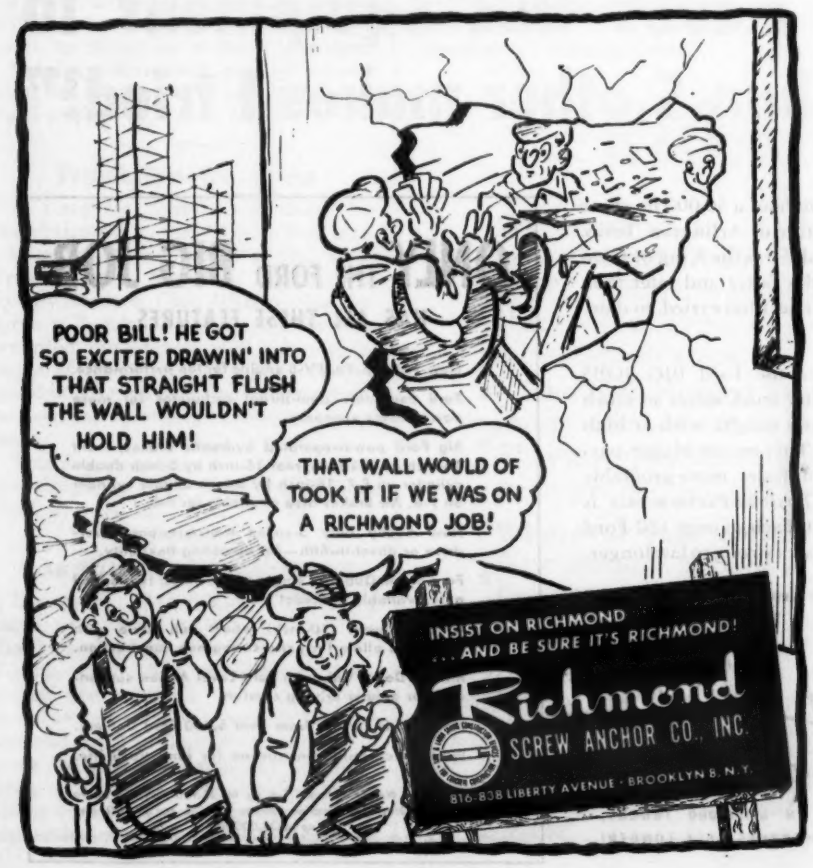
The theme of the open house—"Ceco and Cicero; 30 Years Together"—emphasized Ceco's contribution to the community in terms of employment and taxes, and its contribution to the Chicago area through its work on such buildings as the Merchandise Mart and the Tribune Tower.

## Loader and Attachments

Literature describing the Ware loader and its accessory attachments for use with Oliver wheel and crawler tractors is now offered by the Ware Machine Works, Ware, Mass. It includes a complete description of each model, photographs illustrating various types of work, specifications, and dimensions and capacities of the different attachments.

The loaders are equipped with double-acting cylinders, with detachable piston rods for easy replacement. Pumps in the Ware loaders are engine-crankshaft-driven to provide operation independent of the tractor's main clutch. Attachments for most models include a standard bucket, backfiller blade, rear-end derrick, boom attachments, reversible snow blade, V-type snow plow, and parallel lifting fork.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 106.



POOR BILL! HE GOT SO EXCITED DRAWIN' INTO THAT STRAIGHT FLUSH THE WALL WOULDN'T HOLD HIM!
THAT WALL WOULD OF TOOK IT IF WE WAS ON A RICHMOND JOB!
INSIST ON RICHMOND ... AND BE SURE IT'S RICHMOND!
Richmond
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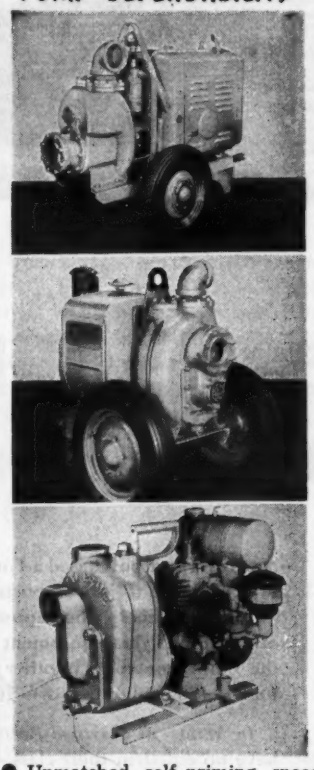
PUMP DESIGN At it's Best

CMC DUAL PRIME

THE LAST WORD IN PUMP DEPENDABILITY

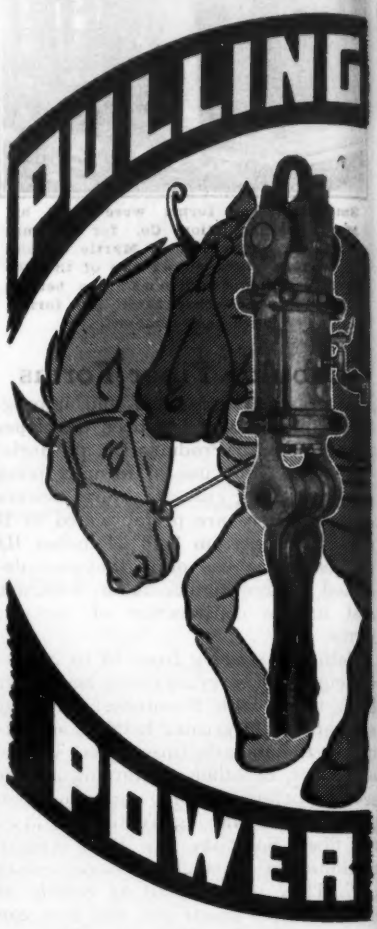


- Unmatched self-priming speed is assured by *exclusive* twin jet construction.
- Extra air-handling ability gives *dependable* performance when ordinary centrifugal pumps become air bound and lose prime.
- Non-clogging, open thrash type impeller handles solids up to ¼ intake size.
- CMC DUAL-PRIME pumps give top performance and maximum dependability even under the most adverse conditions.

*Write today for latest illustrated catalog. CMC DUAL PRIME pumps are available in sizes from 1½" to 10"—capacities from 3000 to 200,000 gallons per hour.*

CONSTRUCTION MACHINERY COMPANIES WATERLOO, IOWA

PULLING POWER



VULCAN PILE EXTRACTORS

• Power is harnessed in the Vulcan Pile Extractor for just one purpose: pulling piles under the toughest conditions. That's specialized power which means maximum efficiency and speed on the job every minute, saving time and reducing costs.

This Vulcan Pile Extractor is simple in construction as it is effective and durable. With only one moving part it requires no assembly to put it in service, no adjustments, and it can't get out of order.

Designed for pulling sheet steel, wood, concrete H-beam and pipe piles, this compact, inexpensive machine comes in three sizes to handle any kind of pile extracting job. Write today for complete details.

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CONTRACTORS AND ENGINEERS MONTHLY

470 Fourth Ave., New York 16, N.Y.

## Cableways Are Used On French Power Dam

Chastang Dam, which is being built as one of four dams on the Dordogne River, 155 miles east of Bordeaux, will rank second in France in power and third in output. It will have an installed capacity of 255,000 kw and an average annual output of 540,000,000 kwh. Of an arch-gravity design, the dam will stand 280 feet high, and will have a crest length of 1,145 feet and a radius of curvature of 492 feet. Its cross section will be 75 feet at the base and 18 feet at the coping, with a face slope of 0.4 on the downstream side. With a maximum head of 236 feet on the dam, Chastang's reservoir volume, drawn from a watershed of 1,605 square miles, will be 47,800,000,000 gallons, submerging 1,390 acres in its length of 19.6 miles.

At the dam site, huge Sauerman taut-line cableways are operating over a 1,146-foot span above the valley. With hook loads of approximately 25 short tons, these cableways handle 8-cubic-yard concrete buckets; sections of high-pressure penstocks weighing 20 tons each; machinery; forms and materials going into the dam; and even a small General Electric diesel-electric locomotive. Self-propelled and covering the entire range of construction, the taut-lines pick up material from any point on a platform below the head towers and deliver it to all dam-site points.

Platforms for the cableways were made of reinforced concrete doweled into solid rock after the cut-and-fill work was completed. The platform for the head towers is 101.5 feet above the proposed crest of the dam, and the platform for the tail towers is about 65 feet lower.

The four towers of the Sauerman taut-line cableways ride tracks laid to concentric curves. Monolithic concrete counterweights of 25 tons on head towers and 31 tons on tail towers provide an over-turning stability, under load, of about 125 per cent. Slippage was minimized by battering the head and tail-tower front tracks, the resultant loading being 246 horizontal to 640 vertical.

The structural-steel base of each tower is supported by 24 pairs of double-flanged steel wheels, with 24-inch nominal tread diameter. Six pairs of wheels are located under each corner of the tower. All four towers are driven by similar propulsion mechanisms: wheels at one front and one rear corner of each tower are driven and held (through spur gears mounted on the axles, and pinions mounted between the axles) by a separate G-E propulsion motor.

Synchronous driving of the driven wheels is provided by a common shaft between corner trucks and by differential in actual wheel diameters. The propulsion motor, motor brake, silent-chain drive, and roller-chain sprocket shaft are all assembled on a common bed frame mounted on the tower platform. The propulsion motor is a General Electric 75-hp wound-rotor motor. The brake is a Thrustor-type spring-set unit.

Between each pair of head and tail towers is a 3-inch Monitor-grade locked-coil track cable, weighing 22.2 pounds per foot. It has an ultimate strength of 500 tons, and a fully loaded deflection equal to 6.5 per cent of the span. Running on the track cable are two six-wheel articulated carriages operating in tandem. The front of the carriage is provided with a fall-rope-carrier horn and buffer, used for picking up the fall-rope carriers which have been spaced out along the button line.

The fall-rope carriers support the slack of the hoisting and conveying ropes at intervals along the span. They are picked off the carriage horn by a series of "buttons" fastened to the button line. In all there are 6 fall-rope carriers and a follow-up carrier.

A fall block, consisting of one 30-inch and two 36-inch sheaves, is suspended from the carriage. The block is equipped with a latched swivel hook for attaching the load. The carriage conveying speed is 1,300 fpm. Loads are hoisted at 260 fpm and lowered at 400 fpm. The two-drum (tandem) hoists are each powered by a General Electric 400-hp wound-rotor induction motor, controlled by a 6-point reversing master switch, with 8 points of acceleration.

It is expected that the concrete work on the dam will be finished in 1949, with the first power unit going into service before the winter of 1950-51.

Chastang Dam on the Dordogne River will rank second in France in power. At left in this view are the concrete batching plant and the head towers for the Sauerman taut-line cableways. At right are the tail towers.

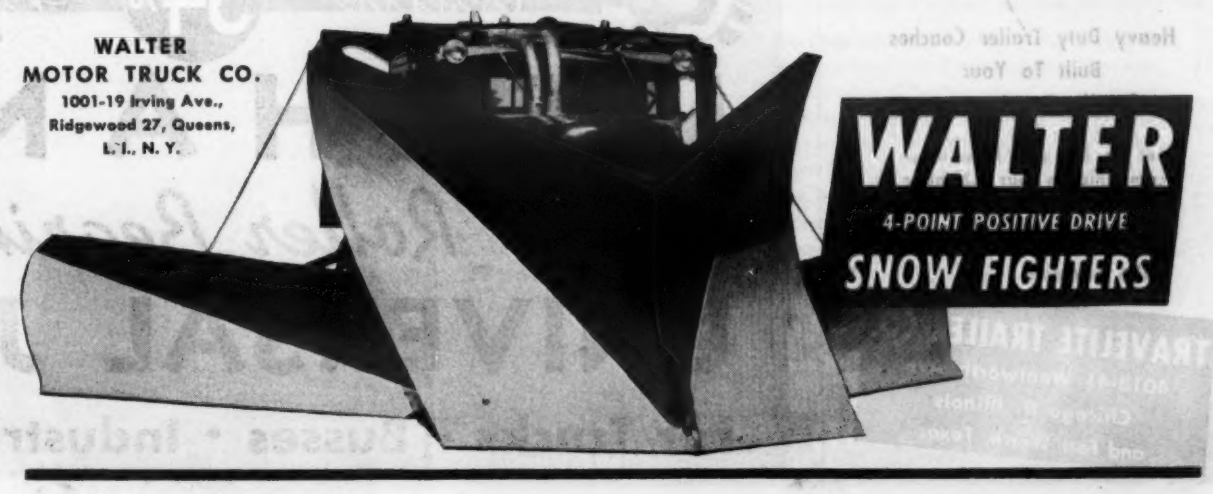
**Faster clearance opens more miles**
**Greater power blasts deepest drifts**

FROM congested city streets to drifted mountain passes, Walter Snow Fighters clear the way fast and keep traffic moving, under every possible condition of snow and ice. These big, powerful, rugged snow removal units—with the 100% traction of Walter Four-Point Positive Drive—keep going when other equipment is stalled.

*Don't risk your winter safety on light, underpowered or improvised equipment that is slow, hard to control, inadequate for the job.* Use Walter Snow Fighters—the only equipment scientifically designed and built for snow removal. Available in models from 150 to 250 hp., with choice of V-Plows, Speed Plows, Side Wings, Center Scrapers, Controls, Sand and Chemical Spreaders, Bodies, etc. See your Walter Distributor, or write us for literature.

Shown below, and in action above, is the 250 hp. Walter Snow Fighter, with giant V-Plow and two side wings, hydraulically controlled. Clearing width 28 ft., at 20-30 mph.

WALTER MOTOR TRUCK CO.
1001-19 Irving Ave.,
Ridgewood 27, Queens,
L. I., N. Y.




*Saw Sensation of the Year!*

New Lombard 30" Two Man Chain Saw
Model 42—4 h.p.—
weighs only 44 lbs.
Equipped with famous Warren High Speed Chain—
cuts easier, cuts faster, cuts longer without dulling
Also Model 4—19" One Man Saw
and Model 7 Master Two Man Saw
in 24, 36 and 48" sizes

*Dealer opportunity in some areas*

**Lombard Governor Corporation**
**Ashland, Massachusetts**

The Perfection can for cleaning parts with inflammable liquids has a fusible link which will melt and close the cover automatically if the contents should catch fire.

## Safety Rinsing Cans

As a safety precaution wherever inflammable liquids are used for cleaning parts, a Perfection rinsing can is recommended by the Industrial Products Co., 2855 N. Fourth St., Philadelphia 33, Pa. If the contents of the can catch fire, a fusible link melts and the cover closes automatically.

Manufactured of 16-gage black steel, it is welded throughout and hot-dipped galvanized after assembly. It is also reinforced around the top edge with a welded iron rim. Three sizes are furnished, all 10 inches deep: 12 x 12, 12 x 24, or 24 x 24 inches.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 154.

## Portable-Conveyor Folder

An 8-page illustrated catalog, No. 495, showing Tote-All lightweight portable power conveyors for handling bulk materials, has recently been issued by the Lake Shore Engineering Co., Iron Mountain, Mich. Included in this folder are photographs, applications, and specification data covering the Tote-All line of conveyors.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 11.

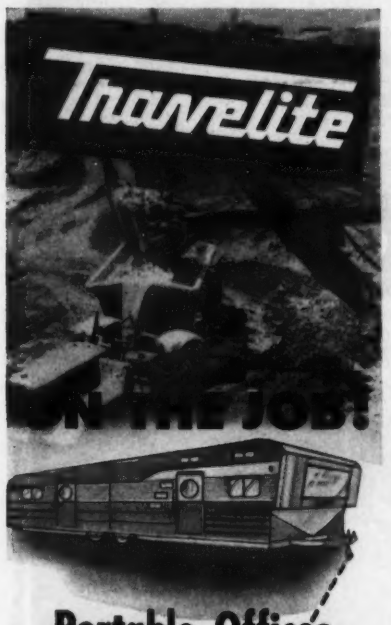
## Mechanized Widening

A newly designed Hi-way widening machine is announced by Gar Wood Industries, Inc., Findlay Division, Findlay, Ohio. The Buckeye Model 616 Hi-way widener is designed to cut side ditch to grade in one pass without disturbing the base, and to leave a clean ditch ready for the paving material.

Powered by a General Motors 67-hp diesel engine in conjunction with a fluid coupling, the Hi-way widener digs up to a mile a day of side ditch, depending on soil conditions, the manufacturer says. The operator sits on a swivel seat with a complete view of the digging wheel, highway edge, and passing traffic. The heavy-duty digging wheel will dig up to 18 inches deep with cutting widths of 24, 30, 36, 42, and 48 inches. A reversible conveyor deposits soil on either side of the machine as desired. After digging operations are completed, the Hi-way widener can move from job to job at speeds up to 20 mph.

The Buckeye Model 616 Hi-way widening machine is designed to cut side ditch to grade in one pass without disturbing the base.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 66.


Portable Offices and Housing for Crews

Heavy Duty Trailer Coaches Built To Your Specific Requirements

Let us tell you how other companies in your field have successfully used Travelite Trailers in solving their on-the-job personnel problems. Write for details.

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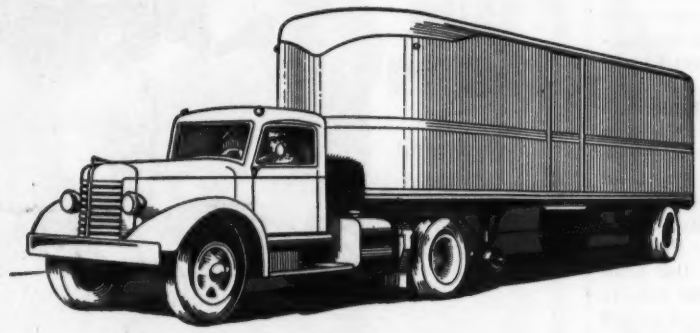
and Fort Worth, Texas

Increase Your Truck's Carrying Capacity



Why make *your* trucks haul unnecessary, non-profit-earning DEADWEIGHT that reduces the PAYLOAD part of their legal gross poundage? MECHANICS Roller Bearing UNIVERSAL JOINTS Truck PROPELLER SHAFTS are made 34% lighter, run smoother and place much less load on transmission and pinion bearings — without loss of torque. Let our engineers help add to the ton-mile capacity of *your* trucks by specifying weight-saving MECHANICS Roller Bearing UNIVERSAL JOINTS Truck PROPELLER SHAFT applications.

MECHANICS UNIVERSAL JOINT DIVISION
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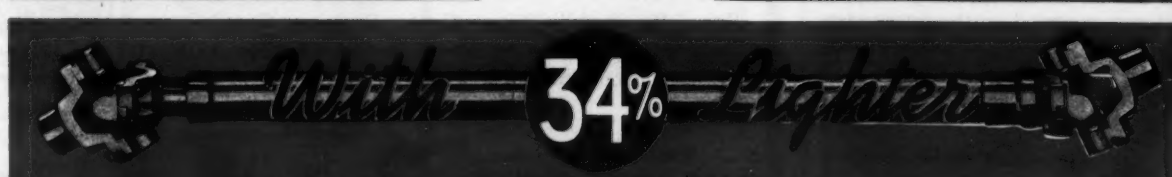


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This night picture of a Model 255-A P&H truck crane shows how its striped light-reflecting bumpers contribute to safety in driving and operating the unit.

## Truck-Crane Bumpers Designed for Safety

As a safety feature, the Harnischfeger Corp., 4400 W. National Ave., Milwaukee 14, Wis., ships all P&H truck cranes with light-reflecting bumpers as standard equipment. Using a special process which imparts a high reflective quality, both front and rear bumpers are boldly striped for greater driving and operating safety. The night picture of a Model 255A illustrates how effectively the bumpers contribute to both after-dark and daylight visibility.

The new P&H truck cranes are also being painted a new color. The buff color which has so long identified this equipment is now being replaced by a non-fading golden yellow with black trim.

Detailed information on P&H truck cranes may be secured from the company. Or use the Request Card at page 16. Circle No. 52.

## Portable Truck Scales

A catalog featuring portable all-steel motor-truck scales has recently been released by the L. R. Murphy Co., 1610 N. C St., Sacramento, Calif. The 4-page folder explains that these scales are available in 20, 30, 40, and 50-ton standard models, with other capacities built to order. Featuring all-welded construction, they are moved as one unit with no dismantling or reassembling necessary; they are simply loaded on a truck platform. Photographs illustrate the scale in place and aboard a truck ready for transporting. All features, specifications, dimensions, and capacities are given.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 114.

## ARBA Names S. D. Burton

Shipley D. Burton has been named Field Activities Director of the Highway Contractors Division of the American Road Builders' Association. In this capacity, he will concentrate on increasing the service to highway contractors in the field and on enrollment of new members.

Mr. Burton was formerly Field Activities Director for the American Trucking Associations. He helped organize the National Truck Body Manufacturers & Distributors Association, and it is from this work that he comes to the ARBA. He is a graduate of the National Institute for Trade Organization Executives.

## Telescoping Sleeve

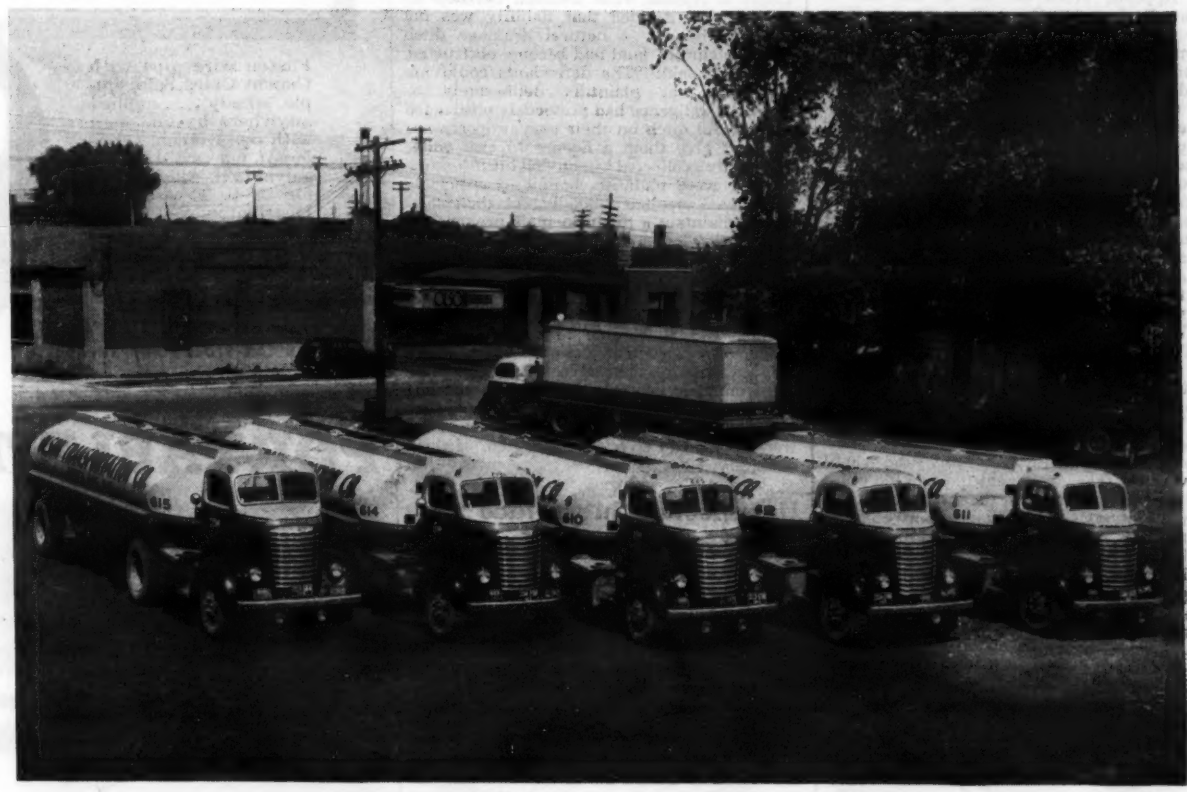
A telescoping accordion sleeve to protect moving parts has recently been developed by the A & A Mfg. Co., 2017 W. Clybourn, Milwaukee 3, Wis. It can be furnished in any diameter or length, and test applications have already been made on sizes from 1 inch ID and 2 inches OD to 12 inches ID and 24 inches OD for lengths from 2 inches to 30 feet.

The material is a special combination of rubber, fabric, and Gortite, designed to give flexibility and maximum strength. The sleeve is non-hydroscopic, impervious to oil and water, and is of uniform thickness, according to the manufacturer.

This product will find application for road machinery, welding positioners, and any construction equipment which requires a sleeve that will compress, fit irregular shapes and surfaces, and will not crack under temperature changes.

An A & A protective telescoping accordion sleeve as applied to the piston on a hydraulic leveling device. It is said to be impervious to oil and water.

Further information may be secured from the company. Or use the Request Card on page 16. Circle No. 85.

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● Approximately 7 million miles are traveled each year by the 450 trucks of the Olson Transportation Company, Green Bay, Wisconsin. Under continuous severe service, engines showed increasingly heavy deposits. When careful checking revealed no mechanical defects, officials turned to a lubrication expert for help.

They consulted a Standard Oil Automotive Engineer. Upon the Engineer's suggestion, the engines were switched to a truly heavy-duty lubricant: Stanolube HD Motor Oil. This superior product put an end to deposit troubles. Engines remained exceptionally clean despite continuing hard service. Cleaner and safer lubrication by Stanolube HD assures this fleet—and will assure yours—of these benefits:

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A trial of Stanolube HD in your fleet engines will show how the benefits of this heavy-duty lubricant actually cut repair costs and keep fleet units on the job longer between overhauls. A Standard Oil Automotive Engineer will help you obtain those savings.

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# Avoid Legal Pitfalls

**Edited by A. L. H. STREET, Attorney-at-Law**

*These brief abstracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.*

## Contract Is One-Sided, So Is Not Enforceable

THE PROBLEM: *Could a contractor collect damages because defendant failed to deliver ready-mixed concrete, under an agreement that did not bind the contractor to accept the material?*

THE ANSWER: No. (Master Contracting Corp. v. M. F. Hickey Co., Inc., 89 N. Y. Supp. 2d 265, decided by the New York Supreme Court, Appellate Division, Second Department.) The decision set aside a contrary decision rendered by a lower court (87 N. Y. Supp. 2d 870).

This rule—that a party to a contract who is free from obligation to perform on his part cannot require performance by the other party—applies not only to the sale of personal property but all sorts of contracts, including agreements for construction work or engineering services.

A leading court decision on this point was rendered by the United States Circuit Court of Appeals, Third Circuit, in the case of Blair Engineering Co. v. Page Steel & Wire Co., (1923) 288 Fed. 662. There the engineering company agreed to furnish "all the necessary plans and specifications for such alterations and additions as the [defendant] may desire to make . . . in its manufacturing plant." The engineering company prepared plans and spex for a plant and was paid $50,495.76 on account. But defendant abandoned the construction project, and the engineering company sued to collect the value of services, alleged to be $308,000. The court decided that there was no right to collect under the contract, but that the case should be submitted to a jury to determine the reasonable value of the services rendered. As to the validity of the contract, the court said:

"Was the contract void for lack of mutuality? Were both parties bound by the contract by definite and precise terms to do definite and specific acts? Alterations and additions to defendant's plant . . . were contemplated by both parties, but was the defendant obligated under the agreement to make any 'alterations and additions' of any kind whatsoever? . . . The agreement imposed no obligation whatever on the defendant to make any alterations and additions of any character. . . . Its undertaking was conditioned by its 'desire', present and future. In case it did desire to make alterations and additions, the [engineering company] was to furnish necessary plans and specifications for them and was to be paid a specified price. . . . It therefore appears that there was no mutuality in the contract, for one party could not be bound to render service unless the other is also bound to do something."

The court intimated that, had the contract provided for payment for the services for preparing plans and specifications as a separate item, the engineering company could have collected the contract compensation, if, as the company alleged, those services had been substantially performed. But it was decided that no basis was furnished by the contract, which provided that the company was to be paid for its "plans, specifications, and supervision an amount equal to 10 per cent of the cost of the work." "The agreement," said the court, "does not provide what part of the '10 per cent' was for the plans and specifications, and what part was for the supervision of the construction."

## Dredger Held Liable For Flooding Airfield

THE PROBLEM: *Contractors dredging a canal on a Government project continued to pump water into a levee-enclosed area knowing that water was seeping through the levee and upon plaintiffs' adjacent airfield. The airfield became entirely flooded. Were the contractors liable in damages to plaintiffs?*

THE ANSWER: Yes. (Kleinclaus v. Rich, 206 Pac. 2d 396, decided by the California District Court of Appeal, First District, Division 2.)

The court decided that liability was not defeated because a natural drainage ditch across plaintiffs' land had become obstructed. The court said: "The defendants could not complain that plaintiffs deliberately or through negligence had previously obstructed the natural ditch on their own property nor did that give them a license to cast water artificially collected upon plaintiffs' land. Neither were plaintiffs bound to anticipate defendants' negligent flooding of their land nor to maintain a ditch on their premises in anticipation of such negligent flooding. If the plaintiffs had negligently permitted their ditch to become obstructed after the flooding commenced a different question would be presented. . . . When their land was already flooded and it became apparent that the ditch was obstructed, plaintiffs at considerable expense to themselves brought equipment on their property and cleared the obstruction. That is all that they could legally be expected to do, and that expense they were entitled to recover as one item of their damages."

## Unexpected Subsurface Conditions on Lock Job

THE PROBLEM: *On a river lock construction job a cofferdam collapsed because of unexpected subsurface conditions. Was the contracting company entitled to an equitable adjustment which had been denied by the contracting officer and the chief of engineers under a misinterpretation of the contract?*

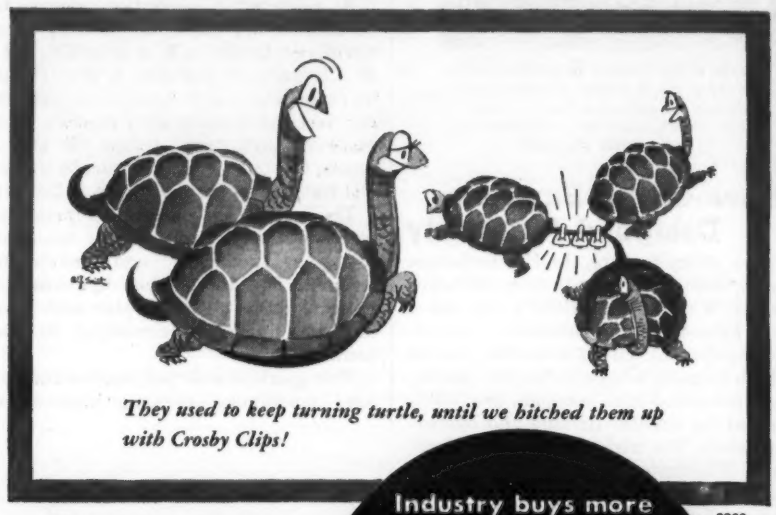
THE ANSWER: Yes. (Joseph Meltzer, Inc., v. United States, 77 Fed. Supp. 1018, decided by the United States Court of Claims.)

The Court of Claims, on considering all the evidence, upheld the contractor's contention that the collapse was due to the unforeseen existence of a ledge of subsurface conglomerate. The court said:

"We think that a subsurface condition was encountered which, as all of the conduct of both the plaintiff and the Government's engineers shows, was not foreseen by them when they made their contract. The purpose of Article 4 of the contract relating to 'changed conditions' is that the bidder should not include in his bid a sum to insure him against loss resulting from unforeseen conditions, but should rely on the Government's promise to grant him an equitable adjustment if the unforeseen occurs and harms him. We think the plaintiff was entitled to such an adjustment."

But the court decided that the contractor was not entitled to an extension of time for completing the contract work—his delayed

(*Concluded on next page*)

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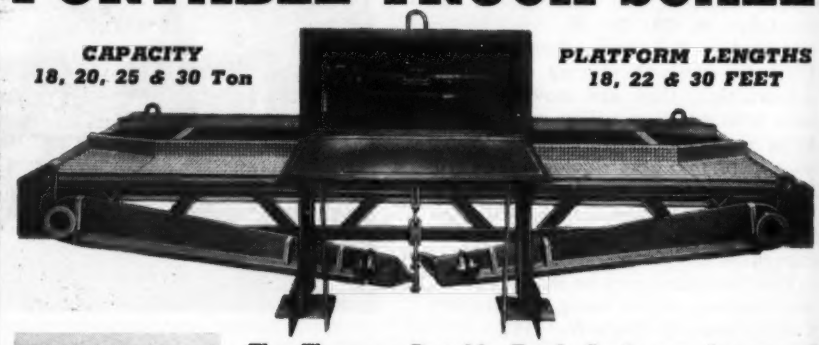

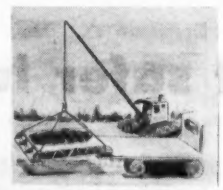

The Thurman Portable Truck Scale can be moved from job to job by removing 6 nuts which hold the side arms in place. The rest of the scale can be lifted in a unit as shown in inserts.

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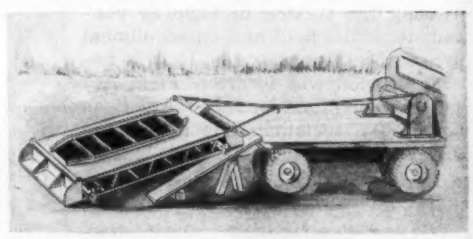
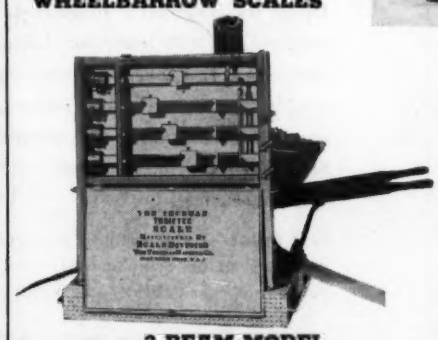


WHEELBARROW SCALES



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performance resulted from a voluntary flooding of the reconstructed cofferdam to guard against apprehended repetition of the collapse. On this point the court said:

The contracting officer denied the request, apparently upon the ground that the plaintiff's apprehension was unfounded. We think that the plaintiff has not proved that the peril to the cofferdam, strengthened as it was after the April collapse, was sufficiently imminent as to make this voluntary flooding a necessary consequence of the unforeseen subsurface conditions."

## Third Party Has Right To Sue the Government

THE PROBLEM: *A War Department prime construction contract, on a cost-plus basis, entitled the Government to take over equipment furnished by third parties to the prime contractors on a rental basis; rents paid were to be applied on the purchase price. Could one of the furnishers of equipment sue the Government for payment of the purchase price, on behalf of himself and the others?*

THE ANSWER: Yes, decided the United States Court of Claims. (Corum v. United States, 81 Fed. Supp. 728.)

The Government said that the plaintiff had no contract with it and therefore could not sue "under our jurisdictional act". The plaintiff's rental agreement was primarily between the plaintiff and the prime contractors, and the Government was not responsible to the plaintiff for the agreed rent.

But the court held that the recapture provision inserted in the rental agreement at the instance of the Government meant that if the Government chose to acquire the ownership of the plaintiff's machines, it had the option to take credit for the rents which it had paid the plaintiff through the prime contractors. This was an agreement for the sole benefit of the Government.

"The only basis on which it could exercise its option was by accepting the obligation to pay for the machines on the terms stipulated in the option. It exercised its option, took the machines expressly pursuant to the option, and by its purchase orders promised to pay the amount computed according to the plaintiff's contract."

Under the facts of the case, the court decided that plaintiff represented other furnishers of equipment similarly situated and was entitled to sue on their behalf, as well as his own.

## Money Advance Did Not Create a Partnership

THE PROBLEM: *A general contractor, needing concrete blocks, agreed to provide funds to meet a block-manufacturing firm's payroll on condition that he be repaid in blocks at current prices as and when blocks were manufactured. Did that constitute formation of a partnership between the contractor and the firm, thereby making the contractor liable to creditors of the firm?*

THE ANSWER: No. (May v. Sexton, 206 Pac. 2d 573, decided by the Arizona Supreme Court.)

The court said that there was no evidence from which intention to form a partnership could be inferred, or to indicate that there was a community of interest between the contractor and the firm in the profits and losses of the block-manufacturing business. "Intent of the contracting parties to form a partnership is always an essential element of the partnership relation as between the parties themselves."

But the court recognized that where parties have so held themselves out to the public as being engaged in a partnership enterprise, persons dealing with them on that assumption may hold them liable as partners, although as between themselves no such relation may exist.

## Workmen's Compensation; A Third-Party Liability

THE PROBLEM: *A driver employed by a truck owner who had contracted to haul gravel on a job was injured. Was the prime highway contractor liable for the injury under the Louisiana Workmen's Compensation Act, although he exercised no control over the driver or owner other than to indicate where the gravel was to be unloaded?*

THE ANSWER: Yes. (Whitman v. Central Surety & Insurance Corp., 41 So. 2d 116, Louisiana Court of Appeal, Second Circuit.)

Yes, said the court, because the Act makes a prime contractor liable for injuries to an employee of one whom he engages to do work required by the prime contract. It is immaterial under the Act whether the owner of the truck be regarded as an independent contractor or subcontractor.

## State Law Covers Govt. Job

THE PROBLEM: *Should a subcontractor's right to extra compensation for work on a Federal irrigation project be determined by Federal Law, or by the law of Washington State where all the material facts arose?*

THE ANSWER: By state law. (Continental Casualty Co. v. Schaefer, 173 Fed. 2d 5, decided by the United States Court of Appeals, Ninth Circuit.)

The court conceded that the Federal courts had jurisdiction of the subcontractor's suit because so provided by the Miller Act of Congress. But it held that the merits of the suit, as between the general contractor and the subcontractor, should be decided the same as if it were pending in a state court, because the suit did not involve interpretation of Federal statutes. The court said that the liability of the general contractor's surety to the subcontractor should be determined by Federal court decisions because affected by Federal statutes.

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## Expendable Forms Insulate Flooring

A recently patented floor form that may be left in place provides insulation for basementless floors. Fabricated by Westbilt, Inc., 93 Tiffany Blvd., Newark 4, N. J., it is made of a water-repellent economical material, structurally sound and bridged to withstand normal field usage and weather conditions.

The forms, supplied in 100-square-foot bundles, collapsed, are straightened up in the field and bridged with strong pieces slipped into the form. They may be altered or cut with a pocketknife. They form a floor section that is arched above the ground surface to give dead air space under 75 per cent of the floor area; they also provide a base for partition fasteners and radiant-heating coils. The one-pour concrete floor may be made as strong as the job conditions warrant.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 128.

## Special Electrode For Manganese Steel

EutecTrode 4/49, a new low-temperature welding rod for ac or dc, has been introduced by Eutectic Welding Alloys Corp., 40 Worth St., New York 13, N. Y., for use in welding manganese steel.

Long-life welds on manganese steels are possible, the company says, because of the balance of the constituents of the electrode. It withstands high impact and has Rockwell hardness of C 26-34, increasing as its work hardens. EutecTrode 4/49 is designed to restore damaged and worn manganese-steel equipment of all kinds and to salvage manganese-steel castings as well. It is available in 3/16, 5/32, and ⅛-inch sizes. The companion rod for torch welding is EutecRod 3, sizes 3/16 and ⅛-inch.

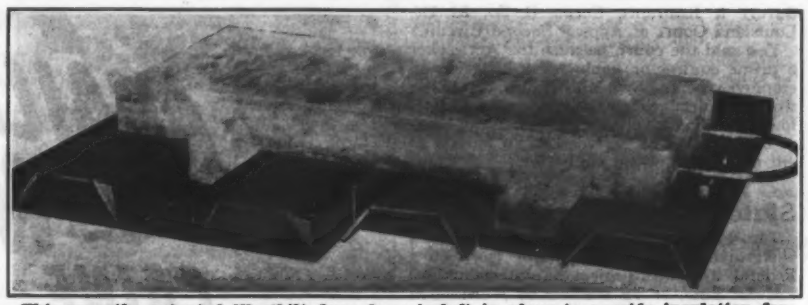
Further information may be secured from the company. Or use the Request Card which is inserted at page 16. Circle No. 132.

## Head-Rest Spectacles

Lightness is the feature of new head-rest spectacles made by the General Scientific Equipment Co., 2700 W. Huntingdon St., Philadelphia 32, Pa. These spectacles are designed for light welding, cutting, and brazing operations where complete eye coverage is not necessary. Known as LTB-50, they take 50-mm lenses available in shades No. 3 to No. 8.

They are made of plastic and the head rest is designed to distribute the weight over the head and relieve pressure on the nose and face. They can be worn over prescription glasses and are adjustable.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 34.



This recently patented Westbilt floor form is left in place to provide insulation for basementless floors. It is made of economical water-repellent material.

## Towing-Type Tractor

Four broadsides on the M-R-S 125 tractor are available from the M-R-S Mfg. Co., Flora, Miss. This unit, a four-wheeled tractor with steerable front wheels, and approximately two-thirds of its total weight on the rear-wheel drive axle, is designed for all-round drawbar work. Fully illustrated with field operation photographs, these folders describe the versatility of this unit in dirt-moving, hauling, and towing work.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 129.

## Electric Power Units

A complete line of gasoline and diesel electric sets, with power ranges of 3 to 50 kw and 5 to 250 kw respectively, is described in a catalog released by International Diesel Electric Co., Inc., 13-02 44th Ave., Long Island City 1, N. Y. These sets are complete auxiliary power units ready to operate when supplied with water, oil, and fuel.

The data sheets explain that the engine-generator sets are mounted on a welded steel base. They are said to be precision-built with true alignment and with speed adjusted and governed for close frequency and voltage regulation. All features of the International Harvester engine installation are fully described. Complete specifications, performance rating charts, and dimensional drawings of each unit are included in this literature.

The catalog is composed of a series of inserts covering all models and types manufactured. The entire catalog, or sheets for any particular power range, may be obtained from the company. Or use the Request Card at page 16 and specify the type of unit in which you are interested. Circle No. 55.

## HRB Proceedings Published

Proceedings of the 28th annual meeting of the Highway Research Board, held last December, have been published in book form. They include some 50 papers dealing with economics and administration, design, materials and construction, maintenance, traffic and operations, and soils. A separate booklet, also now available, contains the report which the HRB Committee on Roadside Development presented at the 28th annual meeting—plus some special papers.

To obtain these publications, address the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. The proceedings volume, No. 23, costs $7.50. The roadside development report costs $1.50.

## Booklet on Drafting Units

A 20-page illustrated booklet has just been released by Charles Bruning Co., Inc., 4754 Montrose Ave., Chicago 41, Ill., describing all models of the Bruning Drafter. Bulletin A-1055 also contains detailed drawings of 38 standard and special scales available for use with the Drafter.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 104.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# Unusual Batch Plant On Concrete Highway

## Contractor Plans Set-Up For Years; His Dream Is Finally Realized as He Lands City Project

✦ A. A. McCREE, President of McCree & Co., contractor of St. Paul, Minn., has realized the dream of a lifetime. For years McCree planned the one perfect batch plant: set up under a bridge. Time passed, but the ideal set-up was never quite possible. Today his dream is a reality. A new concrete-paving project in Blue Earth, Minn., made it so. The conditions were perfect.

McCree had dreamed for years of a location where he could erect a batch plant under a bridge approach trestle, dumping the sand and aggregate down through the railroad ties into the batching bins. His batch plant on the Blue Earth job was set up that way. Its only deviation from plan was the use of engine-driven conveyors and feeder hoppers under the tracks, to stack the material at the plant.

Otherwise, the set-up was perfect. There was ample working room. The plant was located in the exact center of a project only 3 miles long. There was no dead haul. Materials could be handled faster than men and equipment could use them. The gods of chance even smiled favorably in the case of the railroad, because there were only a few trains each day over the Chicago & Northwestern line which crossed Blue Earth River at that point.

### A Metropolitan Project

The job was a $670,000 undertaking 3 miles long in and around the southern Minnesota town of Blue Earth, which is located at the intersection of U. S. 169 and U. S. 16. McCree's contract with the Minnesota Department of Highways called generally for the construction of 3 miles of 44-foot-wide metropolitan concrete paving. Other items consisted of re-grading, construction of a drain system, 30,000 cubic yards of sand cushion material, a new 50-foot concrete-beam bridge, widening another from 30 to 50 feet, and curb-and-gutter work.

The city of Blue Earth participated with the Minnesota Department of Highways and the Federal government in financing the construction.

While the plans called generally for 44-foot concrete, the fact that it was a metropolitan project with many moves precluded any long, high-production runs. There were too many transitions; too many intersecting points to meet; too many days when the big 22-foot paving and finishing machines had to stand idle while smaller equipment built the smaller sections.

Thus the same equipment and men which in the summer of 1948 had production runs over 1,700 feet at the rate of 209.8 feet per hour on 22-foot pavement, now took it a bit easier in an effort to do all the tedious, painstaking work required in city paving.

The pavement on this project wasn't easy, either. Plans called for 9-7-9-inch concrete, with 4 feet of taper from the 9-inch edge to the 7-inch dimensions. That, and some of the awkward transitions, called for a great deal of hand labor in fine-grading.

### Certain Items Sublet

McCree sublet certain items of the work. Bridge construction was subbed to Feller Co. of Rochester. Grading work went to Leon Joyce of Rochester, who used 3 D8's with Gar Wood scrapers, along with 2 DW10's and LaPlant-Choate scrapers, to move the excavation. A double set of sheepsfoot rollers was also on the earth work.

Emil Olson & Son of Albert Lea, Minn., subbed the production and hauling of the sand cushion material. Using a 1-yard Northwest dragline and several dump trucks, the company dug sand out of a native pit about 7 miles from Blue Earth. It was hauled to the subgrade, spread, and rolled by pneumatic methods. Both the grading and sand subcontractors stayed nicely out in front of paving operations. In fact, Feller, the bridge subcontractor, set an exceptionally fine example for others to follow. He used plywood forms to build a very high standard into his structural concrete.

"He turned out such good work that he made it a little difficult for anyone

(*Continued on next page*)


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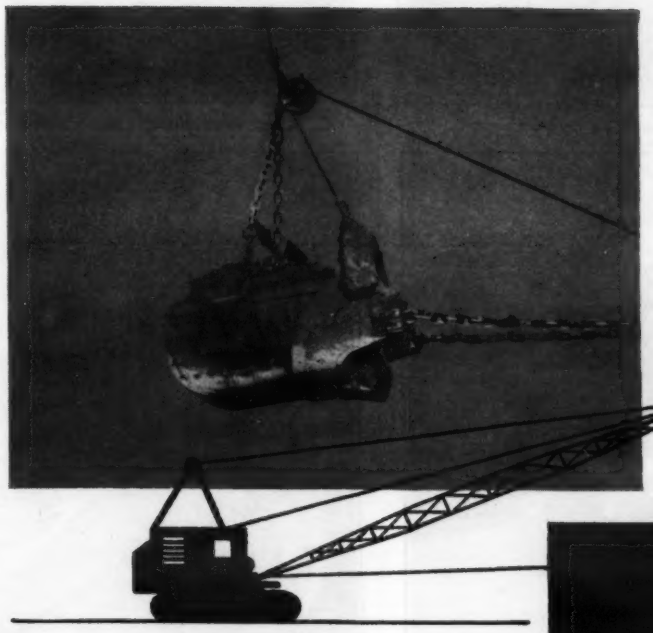

Yaun's Dragline Buckets—either solid, perforated or basket type—fill faster, dump cleaner and quicker because of their unique design and size-to-weight ratio. Engineered for perfect balance means easier handling for your operator. All buckets available in three weights: light, medium and heavy duty.

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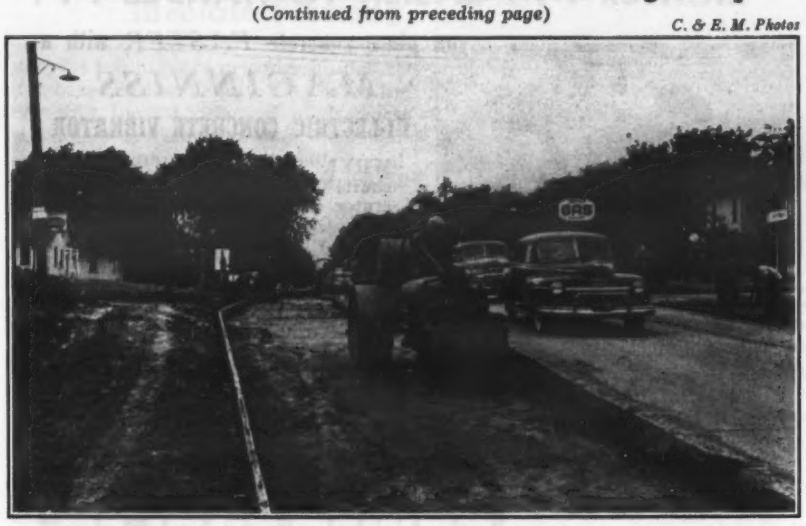
YAUN WELDING AND DRAGLINE BUCKETS, INC.
BATON ROUGE, LOUISIANA

# Unusual Batch Plant on Concrete Highway

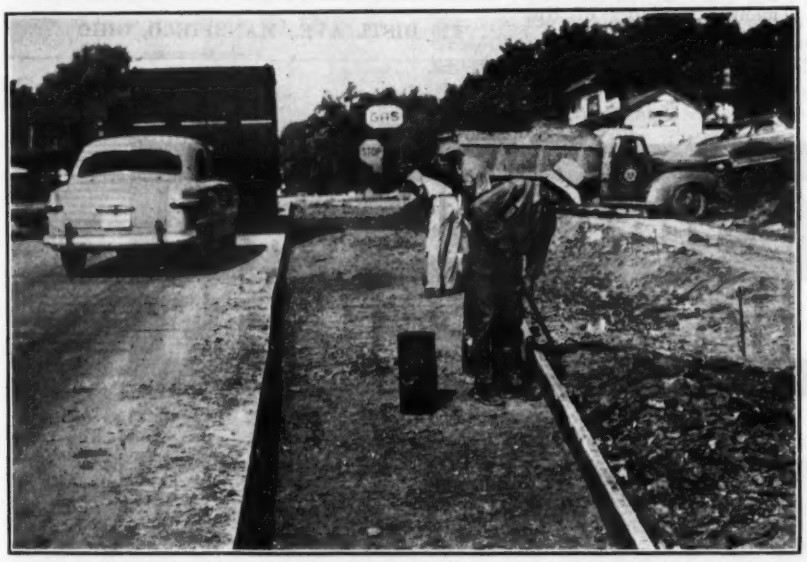
(Continued from preceding page)

C. & E. M. Photos

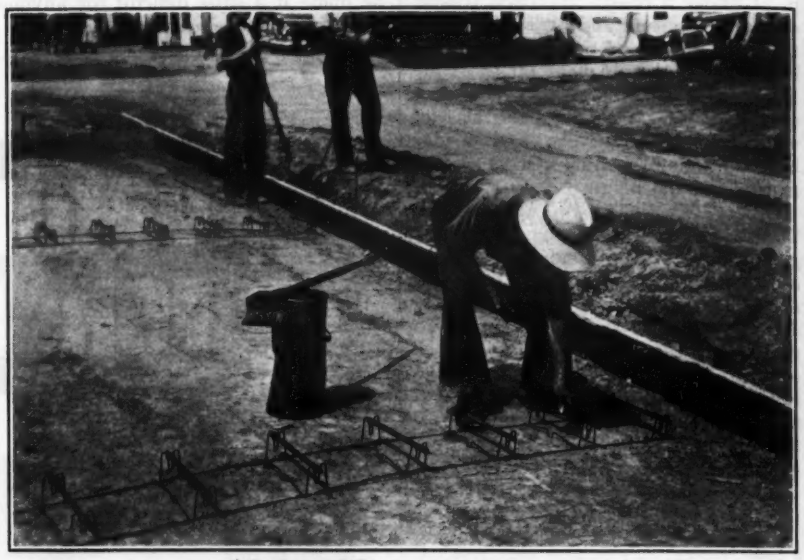


1. A Wehr steel-wheeled roller compacts subgrade on the McCree concrete-paving job.

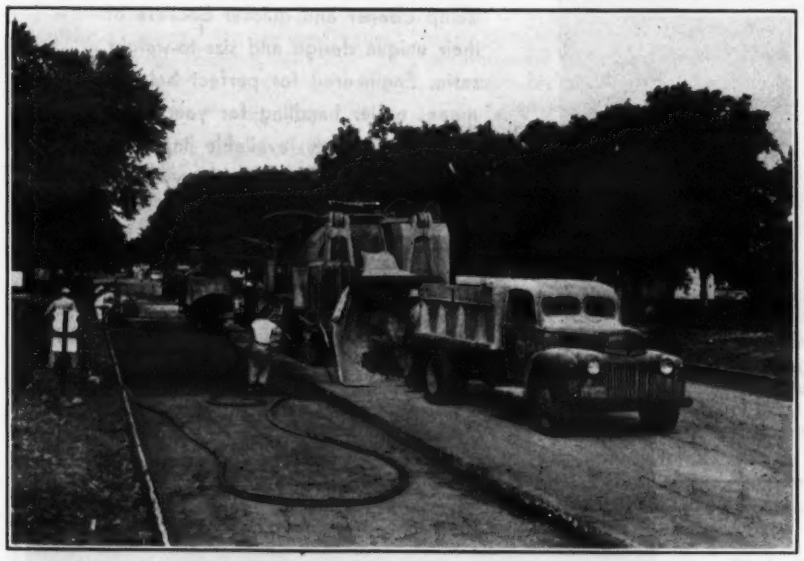
2. A Cleveland form tamper tightens dirt around the base of 9-inch Metaforms.



3. The Metaforms are oiled inside and outside, as shown in this picture.



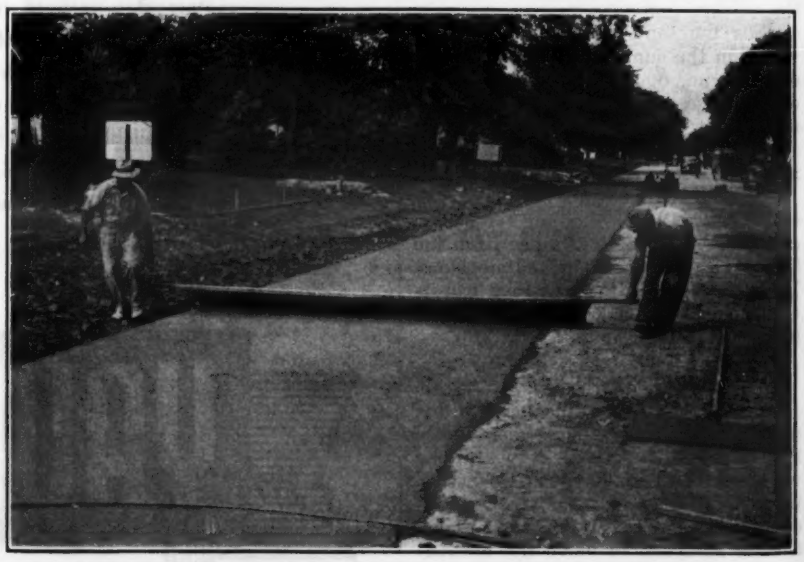
4. An oiled dowel bar for a contraction joint is set in a steel chair support.



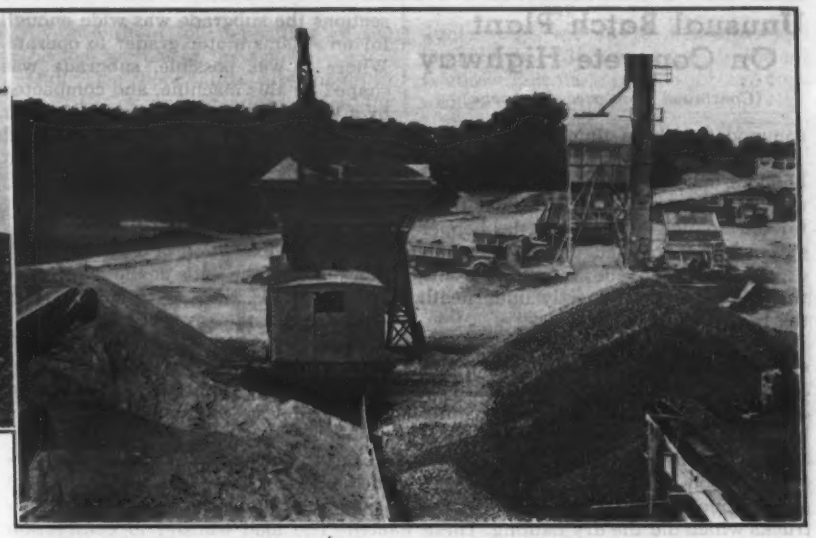
5. The paving-machine line-up, looking towards the village of Blue Earth, Minn.

6. A bucket of concrete is dumped from the boom of a Koehring 34-E Twinbatch paver.

7. For spreading, a Blaw-Knox machine and a Jaeger Type K diagonal screed finisher.



8. Workmen drag a burlap cloth over the concrete to put on the final finish.



*C. & E. M. Photos*

Aggregate and sand for the McCree paving job were unloaded into timber feeder bins from the railroad trestle shown above. Conveyors carried the material to the batch plant. At right is the Johnson manual batch plant as it looked from the trestle. A Link-Belt crane with a 1¼-yard clamshell is charging the Johnson bins.

else to duplicate it!" said one of the paving men, smiling.

### Brielmaier Directs Work

Robert Brielmaier, widely known Minnesota paving superintendent, directed the overall field operations of the McCree organization, and coordinated the efforts of the subcontractors.

One of the first operations Brielmaier got into was the removal of about 7,300 square yards of pavement. Most of this was old bituminous mat, which broke up easily with the aid of a skull-cracker. But some consisted of portland-cement concrete paving 9 inches thick, in city transitions built 20 years ago.

A concrete saw was used to excellent advantage here. Averaging about 1,500 linear feet per blade, the machine cut a 2-inch-deep groove about 12 to 14 inches back from the edge of a tapered integrant curb. Heavy pneumatic guns, with sharp moil points, then worked from this crack to break off the old curb, and make a smooth surface for the new pavement to meet. Some of the curb was also demolished by the breaking ball, but after a pilot cut had been made with the saw. The cut was made at a cost of 10½ cents per foot.

The bituminous material, broken up and pulverized by rollers, was stockpiled near the batch plant. It was used with some fine aggregate for the construction of new 8-foot shoulders along the highway after all the pavement was in.

### Batch-Plant Set-Up

Sand and 1½-inch maximum-size rock aggregate were supplied from the Hallett Sand & Gravel Co. plant in Mankato, and sent to the project in hopper-bottom railroad cars. Approximately 14 cars of material a day was the greatest amount handled, but the unusual facilities could easily have ac-

(Continued on next page)

Last winter's big snows proved beyond doubt that La Crosse trailers can practically *double* the efficiency and working range of slow-moving snow plows, dozers, loaders, etc. By purchasing *extra* trailers now, you can move your big equipment where it's needed FASTER . . . get it working QUICKER . . . on to other jobs WITHOUT COSTLY DELAYS. Moreover, you keep your investment low . . . have extra trailers for year-'round utility.

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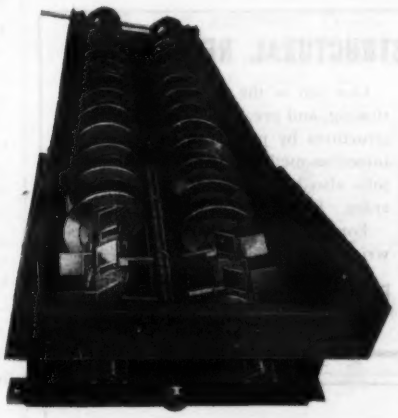
Eagle Screw Type Gravel Washing-Dewatering Units are helping scores of producers to salvage material that was formerly unsalable—enabling other aggregates producers to work deposits contaminated with clay, loam, silt and debris.



"Put the Screws" ★ on Dirty Gravel!

WASH IT!

Several flights of paddles at the feed end of the unit slash through material loosening it up—clay, dirt, debris are washed up and out over the weir by water currents rising from bottom of tub. The aggregate, heavier, settles to the bottom, is picked up by screw flights and conveyed up to discharge. The material comes clean.

★ DEWATER IT!

As the material is conveyed upward toward the discharge end, water is wrung out—exclusive perforated flights speed the dewatering, if pit-run with sand content is involved. Usually Fine Material Screw unit with large settling basin afforded is required to handle pit-run, if retention of fines is desired. Unit pictured is equipped with Trash Remover tub end. More and more plants are "staying out of the red" with Eagle Equipment.

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# Unusual Batch Plant On Concrete Highway

(*Continued from preceding page*)

commodated three times that much.

The cars were spotted over dump hoppers, with the aid of a 2-way cable rigging and an ancient Caterpillar tractor old enough to vote. As the hopper gates were opened, the materials dropped through the trestle ties into timber feeder bins directly underneath the railroad track.

Each feeder bin had a Pioneer 24-inch engine-driven stacker conveyor about 50 feet long, which carried the material over toward a 70-ton Johnson manual batch plant. A Link-Belt crane with a 1¼-yard clamshell bucket charged the two Johnson bins, and a plant operator proportioned the materials for 5 batch trucks which did the dry hauling. These trucks were Fords, and each hauled two 38-cubic-foot batches.

Located only 200 feet from the aggregate batch plant was a 390-barrel Johnson cement-storage silo, which weighed out the bulk portland cement used in the mix. Lehigh portland cement, in bulk form, was shipped in to a railroad siding at Blue Earth and transferred to a temporary storage bin by a Johnson screw elevator. A Ford truck with a metal top over its dump bed transported this cement to the Johnson plant at the batching location. It dumped to a ground-level hopper, and the screw feeder sent the material up to the plant bin, where it was weighed.

Carney natural cement was also used in the mix, to obtain scale-resistant advantages and to entrain about 3 per cent of air. It arrived in 50-pound bags, was stored temporarily in a small cement shed, and added to the batch trucks as they went by. A typical 38-cubic-foot batch, dry weight, contained the following ingredients:

| | |
|---|---|
| Sand | 1,358 lbs. |
| 1½-inch rock | 3,165 lbs. |
| Natural cement | 100 lbs. |
| Portland cement | 605 lbs. |

The mix was designed for a 2 to 3-inch slump, and test results on beams showed average 7-day flexural breaks around 550-600 pounds. A testing laboratory, with a water tank for the immersion of specimens, was situated at the batch plant.

The batch trucks followed a systematic route through the plant site. They drove under the aggregate plant to get their sand and rock, backed out and headed straight through under the Johnson cement plant, and stopped temporarily on a direct drive past the natural-cement platform. In the trip to the paver skip they usually drove in traffic to a point past the paver, and then backed in to the skip when the space was empty. Flagmen, of course, assisted them in getting in.

According to the plant operator, the batch-plant machinery is highly mobile. Several times recently when it has been moved, the equipment has been dismantled with a minimum of difficulty. The Johnson cement elevator, for example, knocks down without removing the bucket line. The men block the bucket line so it cannot move, rig for a crane lift, and set the entire elevator down on a trailer. It can be moved quickly and set up again in a short time: an important detail in today's high-speed competitive paving.

### New Steel Forms Used

Superintendent Brielmaier had 2,000 road-feet of new Metaform 9-inch steel forms available on the job. This was not a bit more than he needed. The forms were usually set up ahead of the paver at the end of each day's work. They were set on the sand-cushion subgrade prepared ahead by the fine-grading crew.

It was practically impossible to do extensive fine-grading with the aid of power equipment. However, in some sections the subgrade was wide enough for an Adams motor grader to operate. Where it was possible, subgrade was shaped by this machine, and compacted by a Wehr steel-wheeled roller. A labor gang was also used on fine-grading, and constant string-line checking insured the accuracy of the grade.

### Pavement Joints

With the exception of 1-inch expansion joints at the ends of the bridge approach panels, and ½-inch expansion provisions at the property lines of intersecting streets, the new paving is not loaded up with expansion joints. There will be none to extrude and cause motorists and maintenance men so many headaches.

Contraction joints consist of a weakened plane, with a strip of ⅛ x 2-inch asphaltic felt set flush with the pavement. The load transfer at contraction joints is taken on ¾ x 18-inch steel dowel bars, oiled, and set midway in the slab on a steel-wire chair framework. The contraction joints are on 15-foot centers.

Construction joints at the end of the day's work were made at the location of a contraction joint. Dowel bars here consist of ¾ x 60-inch steel bars, 14 to a joint.

The two 22-foot lanes, on the main paving section, are tied together with ½ x 30-inch steel tie bars on 28-inch centers. This makes a smooth joint, which, with a longitudinal keyway formed by a metal strip, will take the transfer of crossing loads in good shape.

### Large Paver Used

The paver for the project was a Koehring 34-E Twinbatch. With a selection of auxiliary equipment, it was brought in to speed the concrete placing as much as possible.

Mixing water was secured from the Blue Earth city supply, and delivered to the paver through steel pipe lines and flexible hose. As a rule, the paver was spotted between 5 and 10 feet outside the forms, making it possible to reach all parts of the pour with its 35-foot boom.

Dry batches were mixed 1½ minutes with water, and then dumped out on the subgrade. On the 22-foot lanes, the material was spread between the forms by a Blaw-Knox concrete machine. A Jaeger Type X diagonal screed finisher then followed up, putting the first mechanical finish on the slab. Contraction joints were usually cut by a shop-built machine, except that on narrow work they were formed by a short metal strip, driven down by wooden hammers.

The final mechanical finish was put on by a Koehring Longitudinal Float Finisher. A great deal of hand floating with long-handled bullfloats was also done, and the edges were carefully finished off with steel tools. Hunt Process membrane solution was the curing agent.

The exception to this procedure was narrow-lane work on widening, and some of the transition sections. The large equipment remained idle here, with the exception of the 34-E Koehring Twinbatch paver, which ambled along at idling speed on the narrow lanes. An Ord concrete-road surfacer took care of the spreading of concrete on the narrow lanes. It was followed by the usual hand bullfloats, which put on the dense finish.

In all cases, a final finish was put on by dragging a narrow strip of burlap longitudinally along the slab. No

(*Concluded on next page*)

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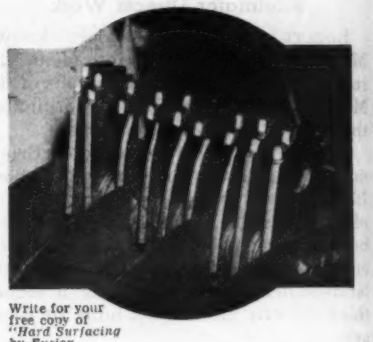

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**Contractors and Engineers Monthly**
**470 Fourth Ave.**
**NEW YORK 16, N. Y.**

brooming was done.

Form pins were pulled by a mechanical puller, and the forms moved ahead the next day. A flat-bed truck was used for this haul.

Throughout the paving, the control of traffic was a serious problem. Heavy east-west tourist traffic used U. S. 16, and plenty of Yellowstone National Park tourists had to pass through the project. Where it was possible to do so, traffic was detoured through some of the city streets, but in many cases flagmen had to handle it through the paving activity. This was done safely, and with the least trouble to the motorists.

### Personnel

The Blue Earth paving project was designed under the general supervision of O. L. Kipp, Assistant Commissioner and Chief Engineer of the Minnesota Department of Highways, with C. L. Methen as Construction Engineer and F. L. Baker as Resident Engineer.

For the McCree organization, Robert Brielmaier was in charge as General Superintendent, assisted by his son Don as Paving Foreman, B. O. Baer as Drains Foreman, Fred Anderson in charge of subgrading, Bill Leininger on the batch plant, and George Volkmann as Office Manager.

The project was completed on October 15, only 4 months after paving started. It now carries traffic through Blue Earth in much better shape, and eliminates a serious bottle-neck. The recent project, planned for stage construction, was foreseen many years ago by Minnesota engineers, and the general plans were in the making for a long time.

## Adjustable Steel Forms For Concrete Bridge Rails

The use of adjustable steel forms for the construction of concrete bridge railings, on varying grades, is the subject of a folder released by Concrete Forms Corp., 43 Cedar St., New York 18, N. Y. This is the first of a series of pamphlets describing the use of steel forms for special purposes in poured concrete. It contains complete drawing details of steel forms for concrete bridge railing and for the assembly of form panels. These plans are designed for use by engineers, architects, and public officials and as aids to the men on the job.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 117.

## Concrete-Pipe History

A 12-page two-color booklet on the use of concrete pipe during the last 107 years has been issued by the Universal Concrete Pipe Co., Columbus, Ohio. Documentary material obtained from the Warshaw Collection of Business Americana, New York City, is used to illustrate the booklet.

Reproductions of early booklets, invoices, price lists, tests, advertisements, and testimonials highlight the historical resumé. The booklet points out that the first concrete-pipe sewer line was installed in this country at Mohawk, N. Y., in 1842.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 69.

## Truck Service Tools

A service bulletin, No. DT-50, on Diamond T trucks has been issued by the Owatonna Tool Co., 348 Cedar St., Owatonna, Minn. It illustrates a tool set developed particularly for Diamond T truck service and gives helpful tips on operations involving the removal and installation of gears, bearings, sleeves, pulleys, bearing outer races, shafts, pinions, and other close-fitting parts. These tools are universal and operate on other makes and models as well. Model changes are said not to affect their utility. With this set, special pullers are unnecessary.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 50.

## Clips for Laying Wood Over Concrete

Floor clips for laying wood-finish floors over concrete construction are manufactured by The Bull Dog Floor Clip Co., 108 N. First St., Winterset, Iowa. The use of these clips is as follows. Concrete slabs to be covered with wood floors are screeded and leveled; then before the initial set, the floor clips are imbedded in the concrete up to the top crossbar. After the concrete has hardened, the clip tabs are raised and sleepers are placed along each row of floor clips. The sleepers, held snugly between the tabs, are then nailed in place. The finished floor is attached to the sleepers in the usual manner. This method of construction may be used with or without fill, depending on the expected service of the floor.

Bull Dog floor clips are made in Super Junior and Standard types, for 2, 3, and 4-inch dressed sleepers. The regular clips are 1¼ inch wide made of 20-gage galvanized iron. The Super Junior clips are 13/16 inch wide and made from 18-gage stock. Sufficient friction-tight nails for the job are furnished with the clips.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 101.


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Below is an H D 3 crawler loading on a Miller Model B 10 ton Tilt Top. Note frame channels taper from ends to 12" deep at point of load concentration. Miller puts the steel where it's needed.

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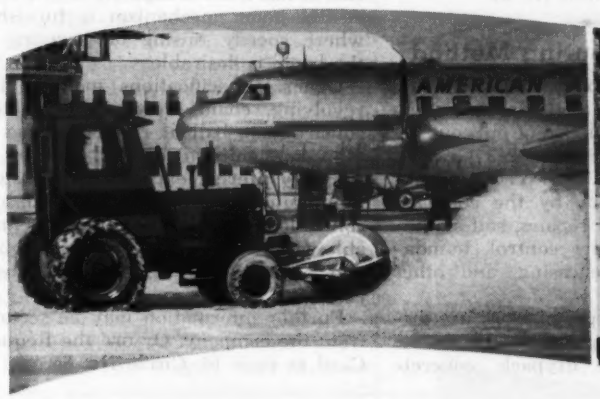
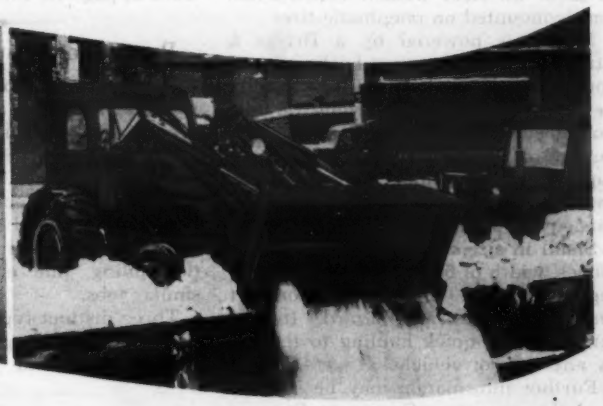



AT THE AIRPORT, Dayton, Ohio, a Case Model "VAI" with cold-weather cab and rotary broom sweeps snow from the loading area in front of the new terminal.



ALONG THE DOCKS in Brooklyn a Case Model "DI" with hydraulic shoveloader acts as dozer to dump heavy snow windrowed by the other "DI" with blade plow.

QUICK ACTION Snow Removal

Easy handling that saves time and energy . . . compactness that makes working space seem bigger . . . sure-footed traction and engines with lugging power in the pinches—they all are reasons why Case Industrial Tractors shorten the hours it takes for snow removal. Extra strength built into Case tractors fortifies them for the extra strains of cold-weather work. It enables them to stand up under the extra load of mounted equipment.

Case tractors have a record for ENDURANCE that commands respect among cost-minded maintenance men. They are built in four basic sizes to fit a wide range of snow removal and snow loading requirements. Let your Case Industrial dealer tell you more. J. I. Case Co., Racine, Wis.

MONTREAL HAS 110 Case tractors. This is Model "DI" with cold-weather cab and sidewalk plow hydraulically operated and adjusted, making fast work of a major snowfall.

IN KAUKAUNA, Wisconsin, the Case "LAI" with shoveloader speeds snow loading. The same unit serves for grading, ice removal, and handling of sand and gravel at other seasons.

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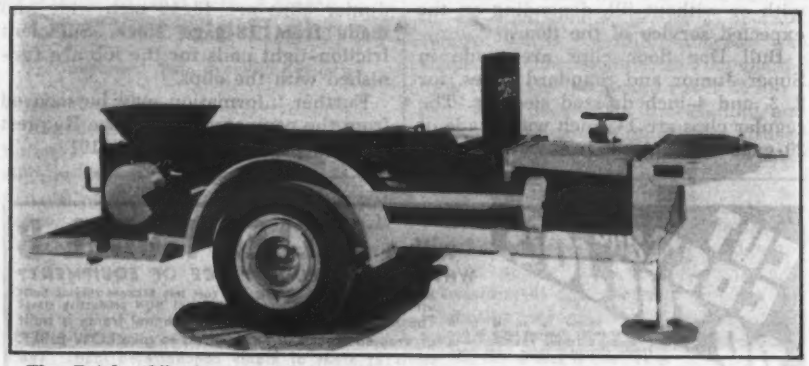
Your Case industrial dealer is located to serve you conveniently, staffed and equipped to serve you well. Besides Case tractors and engine units he offers related equipment such as tractor-mounted loaders, mowers, snowplows, sweepers, bulldozers and scrapers. Specializing in the power and equipment problems that prevail in your area, he has broad experience that can be helpful to you in the selection of units best suited to your work, as well as in their management and maintenance.



The Patchmobile is a complete asphalt plant for repairing and patching roads. It dries and heats sand, heats and melts asphalt, and mixes hot aggregate right at the job site. The units are steel welded construction.

## Mobile Patching Unit

A small-size complete asphalt plant for repairing and patching roads is now manufactured by Wylie Brothers, Inc., 1840 W. Reno, Oklahoma City, Okla. The Patchmobile dries and heats sand, heats and melts asphalt, mixes hot aggregate, and heats tools at the job site. It is of all-steel welded construction and is mounted on pneumatic tires.

Mixing is powered by a Briggs & Stratton gasoline engine; heating is accomplished by a 20-gallon-capacity kerosene burner. According to the manufacturer, the unit has an average output of 1 ton per hour, sand-drier capacity of 800 pounds, asphalt-heater capacity of 40 gallons, and a pugmill capacity of 3 cubic feet per batch.

Small in size, with a length of 156½ inches, width of 66½ inches, and working height of 33 inches, this compact unit offers little traffic hazard. Its tow hitch permits quick hauling to the job by any type of vehicle.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 97.

## A Corner Hand Level

The new Ken corner level, made by the Singer-Kennedy Corp., 21 E. Van Buren St., Chicago 5, Ill., is designed to reduce the number of leveling operations in building construction. The level is constructed of two Z-shaped aluminum bars attached together so that they support horizontal and vertical bubble vials. This construction permits setting one of the bars on each side of a corner or sill and provides two-sided leveling in one operation. It will also level the top face of each brick when it is placed on the mortar joint.

Made in 18, 24, 36, and 48-inch sizes, its aluminum structure offers lightweight for easy handling. This level can be provided with adjustment of one of the glass vials for plumbing a batter or inclined and tapering surface.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 91.

## Pressure Grouting Method

A folder describing Presscrete and pressure-grouting methods, using the Weber system, has been put out by The Presscrete Co., Inc., 243 Graybar Bldg., New York 17, N. Y. It explains that the work done by the company includes structural repairs, soil stabilization, ground-water control, foundation piling, pile encasing, and other similar jobs.

Three distinct types of work are discussed: pressure grouting, Presscrete construction, and drypack concrete placement. A general description of the methods used and a detailed description of the applications for various kinds of work are presented. The catalog also mentions that special services, such as ground boring tests, soil analysis, and professional engineering services, may be secured.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 103.

## Rubber-Tired Crane

A new mobile crane, Model MC-41, similar in most specifications to the crawler-mounted Model 41, has recently been introduced by the Hanson Clutch & Machinery Co., 2000 Miami St., Tiffin, Ohio.

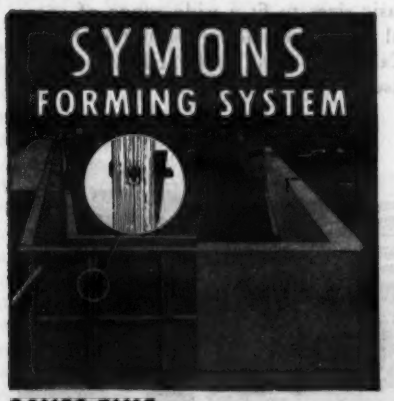
Although called a crane, the newcomer can be equipped with a ½-cubic-yard shovel, trench hoe, clamshell, or dragline. Mounted on rubber-tired wheels, it features four-wheel air brakes, air steering, and optional two or four-wheel drive. All operations are controlled from inside the operator's cab. It has a rated capacity of 6½ tons. A live-boom mechanism is furnished where speedy raising or lowering of the boom is desirable.

General specifications include: full revolving, chain crowd, welded steel construction, ball or roller bearings at all vital points, disk-type clutches on swing — internal-expansion — booster-type clutches on hoist and crowd, air-controlled steering, all clutches relineable without removing shaft assemblies, and a heavy-duty gasoline or diesel engine.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 35.

Similar to the crawler-mounted Model 41, the new Hanson Model MC-41 mobile crane is mounted on rubber-tired wheels. It can be equipped with a ½-cubic-yard shovel, trench hoe, clamshell, or dragline.


SYMONS FORMING SYSTEM



SAVES TIME

Inset shows how Symons System saves time in erecting and stripping forms. Bolt passes through 2 x 4 studs and tie loop. Wedge secures the assembly. This simple device cuts forming time 50%.

SAVES LABOR

Harry G. Dehring, Foreman, Taylor Brothers, South Bend, Ind., states "Seven men set up the forms for a 26' x 27' foundation in one hour and fifteen minutes."

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# Precasting Speeds Bridge Rebuilding

## Concrete Caps, Slabs, and Curbs Cast in Yard; Are Erected by Maintenance Crew in South Carolina

✦ THE South Carolina State Highway Department has been experimenting with a solution to the problem of quick and economical replacement of the many small and worn-out timber bridges on its highway system, principally on secondary roads. These old, wooden spans are being replaced with precast-concrete bridges whose various superstructure members — caps, decks, curb-and-gutter sections—have been built in the Charleston County highway-shop yard. Having been cast and cured, these sections are hauled out to the site of the old bridge. The latter is speedily razed, new timber-pile bents are driven, and the precast sections are set in place to form a new bridge.

Only 4 days' work at the site was required for constructing the first of these bridges—a three-span structure with a total length of 30 feet—located on State Route 165 near Ravenel, 15 miles west of Charleston. Thus traffic was not inconvenienced by this brief 4-day detour period during which the old bridge was removed and the new one set in place to span a swamp creek. The Highway Department does not plan to build long bridges in this manner to replace timber bridges in bad shape—only short ones with 10 or 12-foot spans between bents, where piling not over 40 feet long will be required. Short spans also eliminate the use of girders, and keep the slab work simple.

So far, this precast-bridge construction has been limited to the Southeastern District in the state whose fourteen counties comprise the well known Low Country, where swamps and waterways require a multitude of bridges. In time, this type of bridge may be put into service in the three other Districts—Western, Central, and Northeastern.

### Casting Yard

In the yard of the Charleston County maintenance shop at St. Andrews, timber piles were driven in two rows of seven piles each to form a foundation for the casting bed for the bridge deck. On top of the rows of piles two 10-inch steel H-beams, 36 feet long, were strung out. Across the H-beams 2 x 6's were set on 8-inch centers to support a deck slab form of ⅝-inch plywood. At the ends of this bed, which accommodates forms for a full deck span, curb and guardrail forms were built of steel and wood. The curb section is steel, while the rear or rail portion was made with plywood backed with 2 x 6 studs on 16-inch centers, and two sets of 3 x 6 wales.

Running along both sides of the deck form are 10-inch steel channels, made of ¼-inch stock. They are braced against the deck by 1¼ x ¼-inch steel straps on 2-foot centers. These side forms were specially built by the Southeastern Steel Co. of Charleston. Along the mid-slab depth of these side forms, a semi-circular section of 1¼-inch-diameter pipe was welded along the full length on both sides. Later, when the adjoining deck slabs were butted up against each other, a circular hole was formed the full width of the bridge. Through these holes were threaded 1-inch-diameter bolts, 24 feet 6 inches long, secured in place with nuts and square washers. These long bolts tied the adjoining precast sections together, four deck-slab and two curb-and-gutter sections to a span. Thus the slabs were clamped together in the field by these locking joints so that one cannot move without the others also moving.

Within the full-width roadway-bed form, steel divisor strips of 3/16-inch stock separated the complete span into four sections, each measuring 5 x 10 feet and 10 inches thick. The curb-and-gutter end sections were 3 feet 2 inches high x 2 feet wide. Of the width, the rail and curb were each 6 inches wide, with the 1 foot remaining being part of the roadway. With this design the roadway width between curbs is 22 feet. On the first bridge, this 1-foot width of deck on the curb-and-gutter section projected out from the rear as a lip, thus cutting the roadway width down to 20 feet. The design was since changed, however, so that the foot of

(Continued on next page)

C. & E. M. Photos

In the Charleston County, S.C., shop yard, maintenance men set steel divisor strips in the slab-casting bed to separate the span into four sections (left). Right, they set steel and wood curb-and-guardrail forms at the end of the casting bed.

**Morrison-Knudsen, Peter Kiewit Place Concrete at Lower Cost**

Dumpcretes were picked to haul and place 160,000 yards of concrete for the new East Powerhouse and Pumping Station at Grand Coulee. Hauls to scattered pours range up to 1½ miles. Morrison-Knudsen Co., Inc. and Peter Kiewit Sons' Co. find that Dumpcretes give them *low equipment cost, operating economy and top production.*

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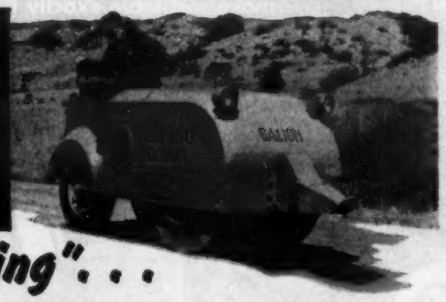

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*South Carolina State Highway Department and C. & E. M. Photos*

**At left is a complete deck pour and also curb-and-guardrail forms—for the Church Creek Bridge on South Carolina State Route 700. Above are some deck slabs and some curb-and-guardrail precast sections for the same bridge.**

## Precasting Speeds Bridge Rebuilding

*(Continued from preceding page)*

concrete on the curb-and-gutter sections became part of the usable bridge width.

### Three-Point Pick-Up

The steel divisor strips were set vertically against wooden chamfers nailed to the slab floor, and braced with 2 x 6's until the concrete was placed, after which the braces were removed. If the cross plates became bent in handling, it was of no concern, for the sections were numbered and later matched together when the bridge was assembled in the field. A 1-inch V-joint was built into the slabs along the divisor-strip sides, making a dove-tail joint in the concrete sections. Thus the precast slabs were tied together both ways—the long bolts running across the bridge and the V-joints going in the other direction.

Slab dimensions were standard, except that the end spans measured 9 feet 6 inches center to center, instead of the regular 10-foot spans. This insured the slab of being supported by the entire cap. All concrete thicknesses are 10 inches.

The slab concrete is reinforced with a steel mat, the lower rods being 1½ inches above the floor. Running lengthwise are ¾-inch rods on 6-inch centers which are crossed with ½-inch rods on 12-inch centers. Curb-and-gutter sections are also reinforced from top to bottom. In each floor slab section, three cat-head holes were made during the pour, two at one end and one at the other, to enable the crane to handle the pieces with a three-point tripod pick-up. Cut-outs were left in the

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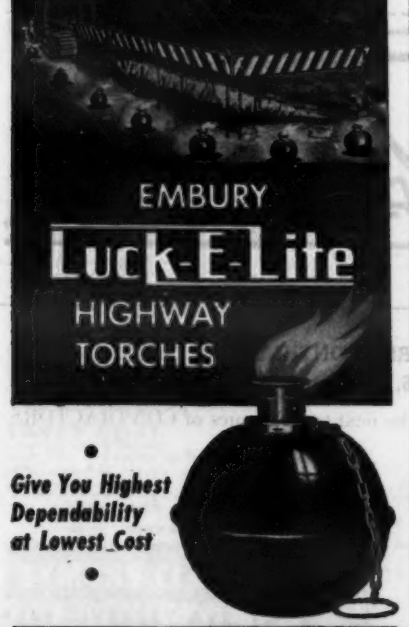

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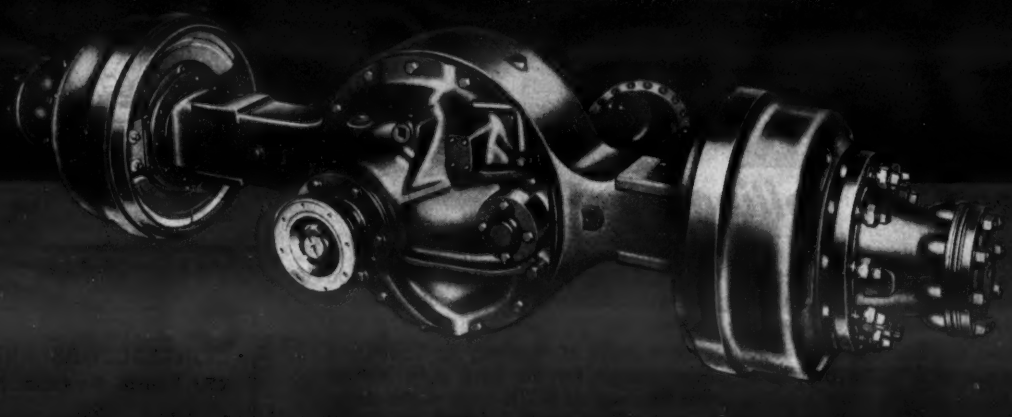

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base of the form to admit pipe which was embedded in the concrete.

These holes served another purpose besides that of pick-up points. When the slabs were placed on the caps, 1¼ x 1-inch bolts were slipped through the holes with their heads and lock washers being countersunk in the concrete. At the bottom the bolts engaged angle-iron lugs, 3 x 3 x ½ x 6 inches long, that fitted up against the cap, thus preventing it from shifting from under the transverse joint of the slabs.

### Concrete Pouring

The deck forms were a combination of plywood and steel; eventually all-steel forms will be used. Conventional wood forms were used for the caps, with ½-inch chamfer strips for the edges. Before being filled with concrete the forms were given a light coat of oil. In the early work the reinforcing was all steel that had been salvaged from other jobs. Medco form ties were used.

On the first job the caps were 12 inches high x 15 inches wide, and on top of these were placed slab rests to support the slabs themselves. But with the second bridge the design was changed, enlarging the caps to a 10-inch-high x 18-inch-wide section x 24 feet long, and slab rests were deemed unnecessary.

On the deck pours a complete span consisting of four floor slabs and two curb-and-guardrail sections was poured at one time. Concrete was purchased from Ford's Redi-Mix Concrete Co. in Charleston, and delivered to the yard in truck-mixers after a 7-mile haul. It was chuted directly into the forms. This Class A concrete was made with Incor high-early cement, and averaged strengths of 4,860 pounds per square inch in 7 days. The concrete was cured with Toxcure compound, and the forms were removed after 24 hours although the slabs were not moved from the platform until 4 days had elapsed.

The casting was done with a yard crew of four men. The concrete was leveled off with a metal screed made by welding together two 3-inch angle irons. The screed was worked so as to impart a slightly rough herringbone finish to the surface of the concrete. Local sand and gravel were used in the mix, with coarse aggregate being ¾ inch in size. The weights of a one-bag batch of concrete were as follows:

| | |
|---|---|
| Cement | 94 lbs. |
| Sand | 165 lbs. |
| Gravel | 367 lbs. |
| Water (5.7 gals. per bag) | 47 lbs. |

### Bridge Erection

In the casting yard the slabs were loaded to an International and a Chevrolet truck by an ex-U. S. Army wrecker truck—a Reo equipped with a 35-foot boom and a Gar Wood winch. The two hauling trucks accommodate slabs for one complete span. An FWD 5-ton truck is being rebuilt to handle a complete precast span by itself. At the job site a six-man crew did all the bridge erection as well as driving the new piling. With the use of precast caps, the piles were driven with greater care as to line than in routine timber-bridge work where such precision is unnecessary.

Driving was done with an Osgood crane equipped with a 40-foot boom and 27-foot swinging steel leads through which moved a 2,000-pound drop hammer. An 800-pound follow block held the piles under the hammer. The usual procedure was to drive two bents of piles starting from one end of the bridge, then put on the caps and slabs for that span. The crane was then moved out on the deck to drive piles for another bent and set the superstructure in place. In this way no falsework was required. On the first bridge near Ravenel 30-foot creosoted piles were used, five to a bent on 5-foot centers, with the bents 10 feet apart.

Then the piles were cut off to grade and the crane set the caps in place. They were secured to the piles with ⅞-inch drift pins 22 inches long, slipped through holes left in the caps when they were cast. One pin was driven by hand 12 inches into each pile. The slab sections were then set over the caps, with the crane using the three-point tripod pick-up, and locked into position with the long transverse bolts. Later the joints were filled with mastic. In case a section of the bridge should ever be damaged, it could easily be removed by chipping out the mastic, withdrawing the bolt, and lifting out that particular member. In case the location of the road is changed, the entire bridge can be salvaged and moved to another location.

Most of these small bridges will be built with land equipment in this manner, bent by bent and span by span, from one end of the bridge to the other. On some water jobs, where land equipment is not practical, the maintenance forces will use an LCT that the State recently acquired. All the superstructure except the pilot house was removed from the craft, and a derrick rig with pile-driving equipment was installed. This self-propelled floating pile driver is faster and more economical than the former State-owned pile-driving barge, which of course had to be towed to a job.

### More to Come

As soon as the precast sections for the first bridge had been removed from

(*Concluded on next page*)

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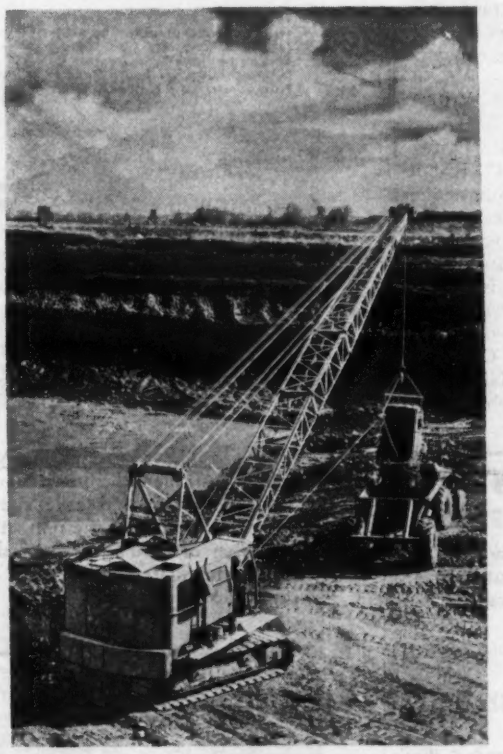
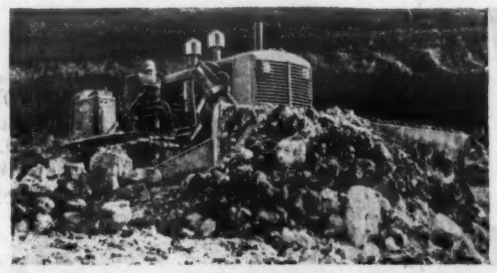


GM Diesel-powered Koehring 605 dragline with 1½ yd. bucket, loads shale in Euclid bottom dump. The GM Diesel-powered Euclids haul 17 yard loads up a 15% grade climbing out of the cut.



Allis-Chalmers HD-19 pulling a 12-ton "rooter" scrapes heavy shale off rock vein in final stage of stripping at National City, Michigan. A General Motors 6-71 Diesel powers the HD-19.

GM Diesel-powered Euclid loader, pulled by Allis-Chalmers HD-19 tractor, teams up with 7 GM Diesel-powered Euclid bottom dumps to move as much as 150,000 yards of earth a month.

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*South Carolina State Highway Department and C. & E. M. Photos*
**On a precast bridge near Ravenel, S.C., a slab is lowered into position by a crane using a three-point pick-up (left). Above, the completed bridge, side view.**

## Precasting Speeds Bridge Rebuilding

*(Continued from preceding page)*

the forms, the crew in the shop yard began pouring concrete for the second bridge. This job consisted of precasting six spans, three on a side, to serve as approaches for the main 117.5-foot steel truss span for a bridge crossing Church Creek on State Route 700, southwest of Charleston. The existing bridge at this site is a timber trestle with a roadway only 12 feet wide, and a small draw span over the channel. The long truss span for the reconstructed bridge was obtained from a grade-crossing structure on U. S. 17 passing over the Atlantic Coast Line railroad. The truss is being replaced with a new reinforced-concrete bridge.

At its new location the steel truss will be supported on timber piles and concrete caps. During the construction the state forces plan on using a 180-foot Bailey bridge to carry traffic over Church Creek on a detour. Traffic must be maintained on State Route 700 since it is the only road serving the community of Rockville located on an island along the coast. The center bents on this bridge will be driven from the floating rig. The width of the truss span being used determines the roadway width of 19 feet 10 inches on the rest of the bridge. Hence the slab sizes differ slightly from those used on the first bridge. The 10-inch thickness is being held, but in addition to the 5-foot-wide deck slabs there will be other slabs with a width of 3½ feet.

Total costs on the first bridge with a 30-foot span worked out in the neighborhood of $93 per linear foot of bridge. This figure is expected to be pared down on subsequent projects as the skill of the bridge builders increases in this new method in bridge construction.

### Personnel

The South Carolina State Highway Department is headed by C. R. McMillan, Chief Highway Commissioner, with S. N. Pearman as State Highway Engineer. W. K. Beckham is Maintenance Engineer with headquarters at Columbia. C. D. Campbell is District Engineer for the Southeastern District with headquarters at Orangeburg.

The work in Charleston County is under the supervision of Maintenance Superintendent T. T. Bobbitt, with C. B. Hunter the Bridge Superintendent for the Southeastern District with headquarters located in the city of Charleston..

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**In PAYLOAD and PROFIT**

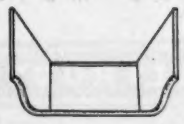
**BOX TYPE ARCH**

Operators say it. Contractors show it. Records prove it! Omaha Buckets make every load a payload, every job a profitable one. The know-how of many contractors and engineers has been built into Omaha Buckets — surplus weight eliminated to give a greater total load; more sturdy design and construction for the tough digging jobs. For performance and profit on the job, Omaha Dragline Buckets Tops 'Em All!

Welded and stayed throughout — has greater strength and more resilience than a solid arch.

**WEDGE SHAPE**

Digs easier—dumps cleaner. Fills with a shorter pull—load slides out through the wide arch.

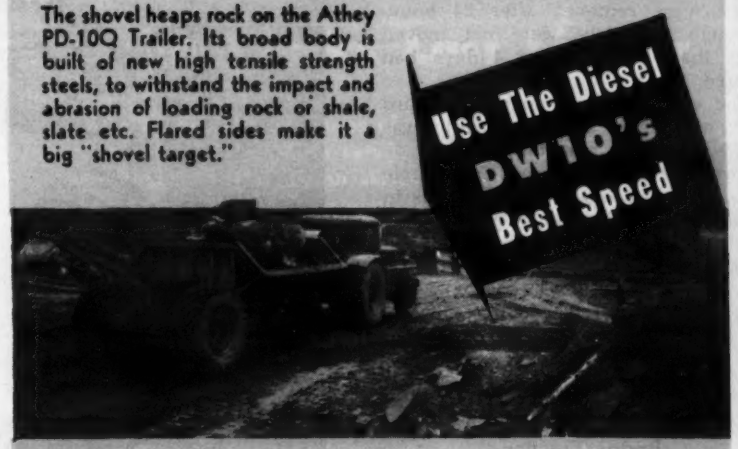


***Write for complete catalog.***

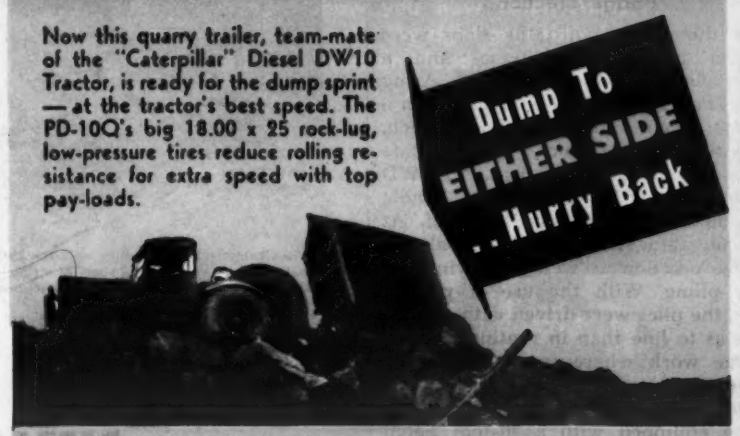
**DRAKE-WILLIAMS-MOUNT • OMAHA, NEBR.**

Three Athey PD-10Q DW10 units service one shovel on 1000 ft. haul (about 200 ft. up 9% grade). Production on large hydro project is 75 bank yards per hour. Owner: Pitts Constr. Co., Mattawa, Ont.
Easy
PD-10Q
Loading

The shovel heaps rock on the Athey PD-10Q Trailer. Its broad body is built of new high tensile strength steels, to withstand the impact and abrasion of loading rock or shale, slate etc. Flared sides make it a big "shovel target."




Now this quarry trailer, team-mate of the "Caterpillar" Diesel DW10 Tractor, is ready for the dump sprint — at the tractor's best speed. The PD-10Q's big 18.00 x 25 rock-lug, low-pressure tires reduce rolling resistance for extra speed with top pay-loads.

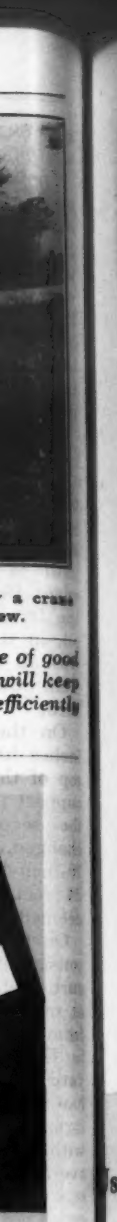



Approach the unloading spot from either direction — the PD-10Q dumps to either side. Touch the hydraulic control lever, and dump the load right now. Heavy hexagonal-shaped cross-members absorb frame torque in loading, roading and dumping . . . Now hurry back and reload!

See your Athey-"Caterpillar" dealer about the Athey PD-10Q for rock-hauling projects.

**Athey** APCOR Products

Athey Products Corporation, Chicago 38, Illinois



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## Convention Calendar

**Dec. 1-2—Southeastern Highway Officials**
Annual meeting, Southeastern Association of State Highway Officials, Marion Hotel, Little Rock, Ark. J. Russell Henderson, Arkansas State Highway Commission, Little Rock.

**Dec. 13-16—Highway Research Board**
Annual meeting, Highway Research Board, National Academy of Sciences Bldg., Washington, D. C. R. W. Crum, Director, 2101 Constitution Ave., Washington 25, D. C.

**Jan. 15-16, 1950—AED Meeting**
Annual meeting, Associated Equipment Distributors, Stevens Hotel, Chicago, Ill. Frank G. Knight, Executive Secretary, 360 N. Michigan Ave., Chicago 1, Ill.

**Jan. 18-20, 1950—ASCE Meeting**
Annual meeting, American Society of Civil Engineers, Hotel Commodore, New York City, N. Y. Don P. Reynolds, Assistant to the Secretary, 33 W. 39th St., New York 18, N. Y.

**Jan. 23-27, 1950—Sand & Gravel and Ready-Mixed Concrete Assns.**
Thirty-fourth convention and exposition, National Sand & Gravel Association and twentieth annual convention and exposition of the National Ready-Mixed Concrete Association, Stevens Hotel, Chicago, Ill. V. P. Ahearn, Executive Secretary, 1325 E St., N. W., Washington 4, D. C.

**Feb. 21-23, 1950—N. Atlantic Highway Officials**
Annual convention, Association of Highway Officials of North Atlantic States, Hotel Statler, New York, N. Y. A. Lee Grover, Secretary, New Jersey Highway Department, Trenton, N. J.

**Feb. 27-March 2, 1950—AGC Convention**
Annual convention, Associated General Contractors of America, Inc., The Palace Hotel, San Francisco, Calif. H. E. Foreman, Managing Director, Munsey Bldg., Washington 4, D. C.

**Feb. 27-March 3, 1950—ASTM Meeting**
Committee week and spring meeting, American Society for Testing Materials, Hotel William Penn, Pittsburgh, Pa. C. L. Warwick, Executive Secretary, 1916 Race St., Philadelphia 3, Pa.

**March 6-9, 1950—ARBA Meeting**
Annual meeting, American Road Builders' Association, Netherlands Plaza Hotel, Cincinnati, Ohio. Charles M. Upham, Engineer-Director, International Bldg., Washington 4, D.C.

**April 26-27, 1950—Transportation Congress**
Third Highway Transportation Congress, National Highway Users Conference, Hotel Mayflower, Washington, D. C. Arthur C. Butler, Director, National Press Bldg., Washington 4, D. C.

### Vehicle Facts and Figures

The 29th edition of "Automobile Facts and Figures" has recently been released by the Automobile Manufacturers Association, New Center Bldg., Detroit 2, Mich. Eighty pages of developments in the automotive industry for the year 1948 are presented. Tabulations and graphs trace industry trends. Each table title is highlighted with the most significant feature or aspect of the compilation of facts and figures shown.

The booklet gives equal attention to truck, bus, and passenger vehicles. The information treated covers the manufacture, distribution, and operation of motor vehicles, and includes data on such related fields as the petroleum, rubber, and road-building industries. Other associated topics include: safety, taxes, registrations, and legal regulations.

### Roof Heat Reduced By Aluminum Coating

The new Tenkote aluminum asbestos roof coating is designed to reduce roof heat and at the same time provide a waterproof non-deteriorating roof surface. Manufactured by The American Asbestos Products Co., W. 80th and Nickel Plate R. R., Cleveland 2, Ohio, the coating may be used on both new and old roofs of paper, felt, composition, and metal of all types. It seals all breaks, nail holes, and seams, and will not crack, peel, chip, blister, or dry out, according to the manufacturer.

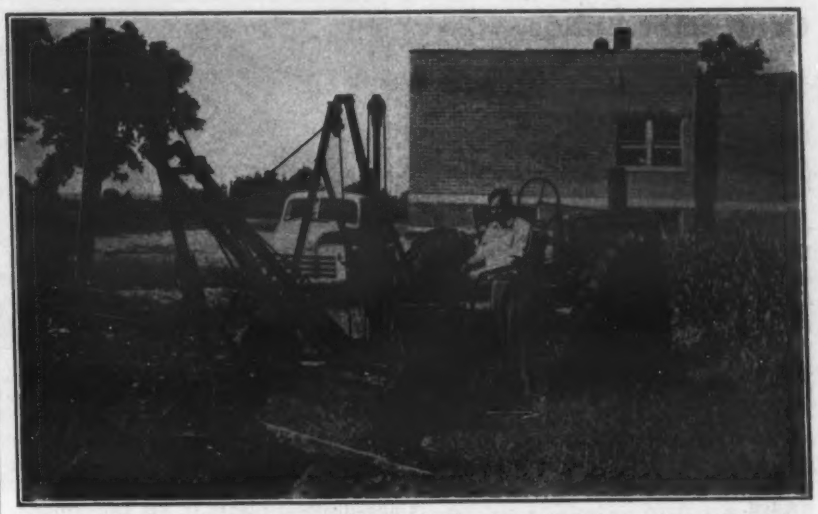
Its base of highly refined asphalt, plus the asbestos fiber, is designed to provide maximum weather protection. Aluminum is said to exhibit a remarkable characteristic when suspended in an asphaltic base. Surface tension brings the aluminum flakes to the surface of the liquid where they overlap or "leaf" and form a continuous film of metallic aluminum. The coating is said to provide a water and moisture-proof surface in addition to offering noticeably cooler interiors.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 108.

### Lettering Guides

New, improved lettering guides for use with mimeographed stencils, in a total of 41 styles and sizes of letters, are now being offered by the A. B. Dick Co., 5700 West Touhy Ave., Chicago 31, Ill. They are made of polystyrene plastic through a high-speed injection molding process. The beveled edge of the cut-out letters and symbols holds the stylus firmly in place. Thicker and flatter than previous types of guides, they are designed to give non-skid performance and are tinted "eye-rest" green for easier vision.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 90.



This new Badger ditcher, for use with any tractor, has a bucket capacity of 4½ cubic feet and weighs approximately 1,850 pounds.

### Ditching Equipment

A new portable ditcher for use with any type of tractor has been developed by the Badger Machine Co., 580 E. Front St., Winona, Minn. The bucket on this machine is 17 inches wide and has a capacity of 4½ cubic feet. The unit weighs approximately 1,850 pounds and is a trailer model which, according to the manufacturer, can be attached quickly and easily to any tractor. The power take-off on the tractor is used for operation.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 156.

### Reduction Crushing Units

A 26-page booklet on the Symons cone crushers, Bulletin 110, is now offered by the Nordberg Mfg. Co., 3073 S. Chase Ave., Milwaukee, Wis. The first portion of the catalog is devoted to applications of these crushing units in a number of industries. The second part, a general description, explains that the standard and short-head cone crushers are of the same general construction, but that they differ as to design and shape of the crushing cavity; the short-head cavity is much narrower at the top, for fine reduction.

Next, reproductions of a slow-motion film illustrate the Symons process of crushing. And cut-away photographs and cross-sectional engineering drawings help explain the operating features of the crushers. The bulletin goes on to explain the entire lubrication system and to recommend lubrication procedures. It also points out the way the unit is protected against tramp-iron damage.

The last part of the book is devoted to crusher specifications, dimensions, and capacities. The 2, 3, and 4-foot sizes are furnished with fine and coarse bowls, while the 4½, 5½, and 7-foot sizes have bowls of the fine, medium, and coarse type. Capacities for these units vary from 6 to 900 tons per hour, the manufacturer says. Their horsepower requirements vary from 25 for the smallest unit to 300 hp for the largest.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 59.

### Electric Tool Booklet

Electric tool catalog No. 52 is now offered by The Bradford Machine Tool Co., Evans and Viaduct, Cincinnati 4, Ohio. This 60-page booklet presents a line of saws, drills, sanders, grinders, and buffers. A photograph accompanies the description and specifications for each model. A variety of saw blades are available for use with the Metalmaster 6 and 8-inch wood saw. All attachments and accessories are covered.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 86.

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A COMPLETE LINE OF HOIST GRABS—for fast safe handling of pipe, rails, drums, plate and structural steel, stone, timber, boxes and odd-shaped objects. Carefully engineered Downs Hoist Grabs have a safety factor much greater than capacity ratings listed. Many types of hooks, tongs, grips and slings available for quick delivery.
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Only 12 hours for complete assembly

1-TON PLANT

FEATURES

- Mobility and ease of transportation (portability)
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*Can be furnished with own axles and pneumatics*

Sizes from 25 to 100 tons (drying and mixing units) available

PROMPT SHIPMENT OF ALL SIZES

Feeders — Storage Bins — Pumps — Timer

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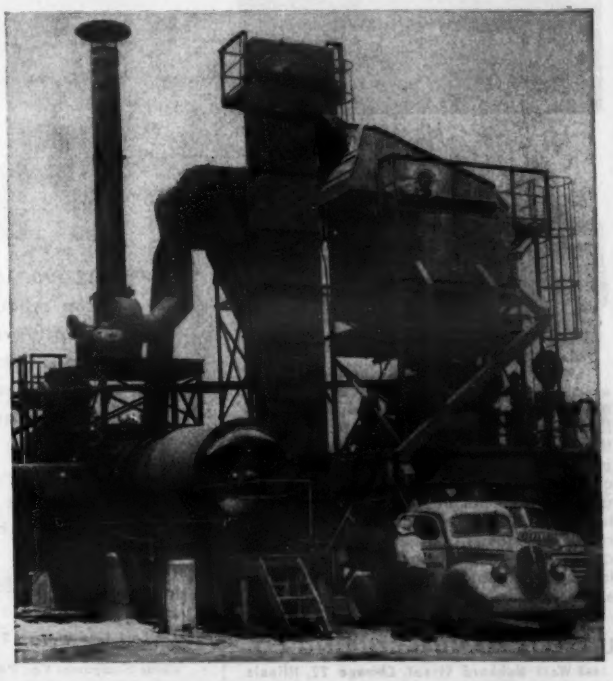


THE F. D. CUMMER & SON COMPANY

*BUILDER OF FINE ASPHALT PLANTS*

Cleveland 15, Ohio USA

## Contractor Builds City Sewage Plant

(*Continued from page* 1)

the effluent from the new plant is planned, and the water is wasted in Salt River.

The Parshall flume measures the volume of incoming sewage, while the bar screen and grit chamber separate large floating objects, rock particles, and grit. The main flow of sewage then passes to the primary sedimentation unit. This 106-foot x 45-foot 4-inch reinforced-concrete divided box agitates, then settles the sewage. Solids are drawn out of bottom sumps in this unit and sent to the digesters. Floating scum and grease is also drawn off, and the clear water sent out to the river to be wasted.

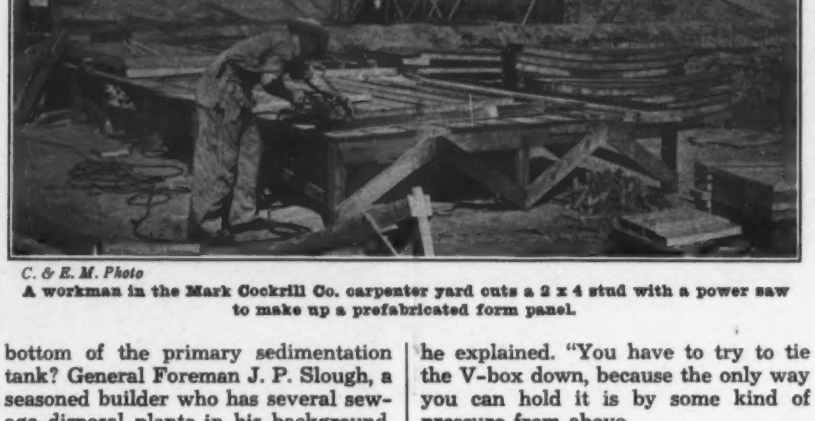
The two digesters are 38 feet in diameter inside, with 12-inch reinforced-concrete walls. They have domed roofs and sloping floors, leading toward a center sump, with floors placed on a 4 to 1 slope. Each digester is 21 feet 9 inches high at the wall line. One digester has a special gas-tight steel dome roof; the other has a reinforced-concrete roof. Plans also include provisions to collect sewer gas in the gas-tight digester, using it to heat the laboratory building. Water for laboratory purposes will also be heated by sewer gas.

The control house between digesters has a sludge pump, a circulating pump, two water seal pumps, a water seal float tank, and a small testing laboratory. Sludge-drying beds are arranged over a 226 x 219-foot area. There are twelve 30-foot beds in this broad area, easily accessible by truck ramps for the removal of fertilizer. For after sludge from the digesters passes to the sludge-drying beds and is dried, it will be sold commercially for fertilizer to help pay for the operation of the plant.

### Small Job Has Many Headaches

The job involved only 850 cubic yards of concrete, 7,300 cubic yards of structure excavation, 107,000 pounds of steel reinforcing, and other such small quantities of pipe, machinery, embedded bolts, and so on. Even so, it posed some of the trickiest problems in layout and construction which some of the men had seen.

For example, how could one form and pour the V-type sump across the bottom of the primary sedimentation tank? General Foreman J. P. Slough, a seasoned builder who has several sewage-disposal plants in his background, said that this one was the toughest he had ever seen.



*C. & E. M. Photo*

**A workman in the Mark Cockrill Co. carpenter yard cuts a 2 x 4 stud with a power saw to make up a prefabricated form panel.**

"When you start vibrating concrete against that sloping face, the form naturally tries to float up out of there," he explained. "You have to try to tie the V-box down, because the only way you can hold it is by some kind of pressure from above.

"Well, we tied it down as best we could, and then after pouring only about 2 feet up the sides, we had to let the fresh concrete take its initial set. Then we'd keep adding in until we reached the top, often filling the form V with heavy sand to weight it down and help hold it in place."

There were tiny 3-inch offsets in the wall forms to make the sewage slide down easily. How to make this form was the subject of discussion for some time. Even the pouring of digesters involved a truck crane with an 80-foot boom to reach all parts of the pour. And with an 80-foot boom, the truck crane would handle only ½ cubic yard of concrete at a time.

One of the parts of the job which gave no trouble was structure excavation. This work was sublet to Allen Contracting Co. of Phoenix, which used a 1½-cubic-yard dragline to muck out the holes. The structural excavation was stockpiled by casting, to be used later on as backfill. It was composed chiefly of sand, small boulders, and gravel—all pervious material. Allen's machine moved in to start the structural excavation early in the job, and it was all finished only six days later.

(*Concluded on next page*)


Night Warning At All HAZARDS—BARRICADES

Big Beam 400-F ELECTRIC FLARE

Night wrecks and accidents caused by hazards and barricades can be averted by warning lights and emergency flares. There are a thousand such uses for the Big Beam Electric Flare with red Fresnel lens. Dependable in any weather, set or hang anywhere in any position, knocking over will not interfere with its operation. A flip of the switch gives the choice of either a steady or a flashing flare. Interchangeable clear Fresnel lens converts it to a regular lantern. As easily serviced as a flashlight.

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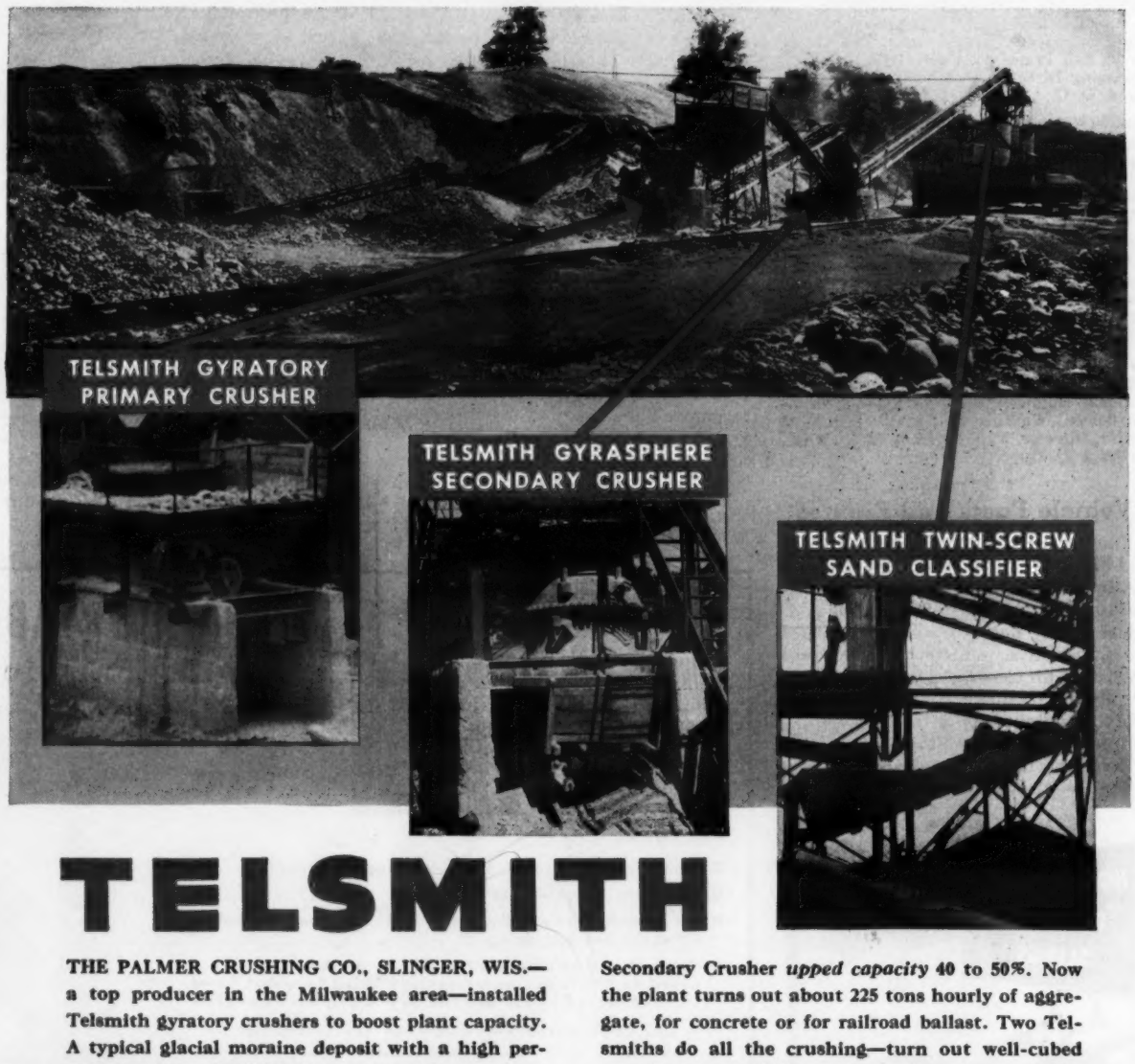
1040 West Hubbard Street, Chicago 22, Illinois

Boosting PLANT Capacity with Gyratory Crushers




TELSMITH

THE PALMER CRUSHING CO., SLINGER, WIS.—a top producer in the Milwaukee area—installed Telsmith gyratory crushers to boost plant capacity. A typical glacial moraine deposit with a high percentage of very hard boulders—their pit runs about 65% gravel and 35% sand. A large percentage has to be crushed. The plant, when first built, used a Telsmith 13-B Gyratory as the primary and a double roll crusher as the secondary. Replacing the roll crusher with a Telsmith 36 Standard Gyrasphere Secondary Crusher *upped capacity* 40 to 50%. Now the plant turns out about 225 tons hourly of aggregate, for concrete or for railroad ballast. Two Telsmiths do all the crushing—turn out well-cubed products—and still have plenty of crushing capacity in reserve. A Telsmith Sand Classifier, with 20" x 15' twin screws, recovers all sand. In this plant it was Telsmith Equipment *again* for Mr. Palmer. The reason—Telsmith big capacity and better performance in his two other plants. Get Bulletin 266.

G-17

SMITH ENGINEERING WORKS, 4014 N. HOLTON STREET, MILWAUKEE 12, WISCONSIN

Cable Address: Sengworks, Milwaukee

51 East 42nd St. New York 17, N.Y. · 211 W. Wacker Drive Chicago 6, Ill. · 713 Commercial Trust Bldg. Philadelphia 2, Pa. · 238 Main Street Cambridge 42, Mass. · Boehck Eqpt. Co. Milwaukee 3, Wis. · Brandeis Mach. & Supply Co., Inc. Louisville 8, Ky.

Clyde Equipment Co., Portland 9, Ore., & Seattle 4, Wash. • General Machinery Co., Spokane 1, Wash. • Interstate Equipment Co., Statesville, N. C. • Rish Equipment Co., Charleston 22 & Clarksburg, W. Va.—Roanoke 7 & Richmond 19, Va. • Wilson-Weesner-Wilkinson Co., Knoxville 8 & Nashville 6, Tenn.

### Form Work Made in the Field

Concrete forms were all prefabricated on the job or field-erected. Digester forms consisted of tongue-and-groove 1 x 6-inch lumber nailed to 2-inch studs and wales. The face of this lumber on the inside of the tank was then covered with heavy form-lining paper. The outside face was lined with ¼-inch plywood.

Forms for the remainder of the job were generally faced throughout with ⅝-inch plywood, nailed to 2 x 4-inch studs on 12-inch centers. One of the requirements of the specifications was that the forms be watertight. This meant that the ends of the plywood facing sheets had to be centered over a 2 x 4-inch stud, to prevent any leakage from the butt joint. Another provision which required painstaking care in the field was that the walls be poured about 1½ inches at the time the floor was placed. Forms to shape this wall concrete had to be hung from above, and workmen had to be cautioned repeatedly not to step on them.

The forms were braced by timbers out to the sides of the excavation, and tied together by steel form bolts. All of the intricate plywood panels, made up in the carpenter yard near by, seemed to fit in good shape when a crane picked them up and installed them in place.

The job carpenter yard contained plenty of room, was only 100 feet from most of the work, and had ample power equipment to turn work out at high speed. A Comet band saw, several Craftsman hand saws, and smaller hand tools were available here.

### Concrete Work

Concrete for the job was batched, mixed, and delivered to the work by Zufelt Ready Mix Concrete Co., a year-old firm newly established in Mesa. The Zufelt plant is small but efficiently arranged. It consists of a two-compartment sand and rock hopper at ground level, a batching bin with scales, a bulk-cement bin with feeder, and a deep access ramp to permit truck-mixers to back in under the plant.

Zufelt hauled aggregates for this job from the South Side Sand & Rock Co., a commercial producer in Mesa. He used his own trucks, and dumped the aggregates to his ground-level bin. Bulk cement came in to the 100-barrel storage bin and was batched out with the rock. A fleet of three Jaeger truck-mixers hauled and mixed the concrete on its way to the job about 4 miles distant.

Class A concrete for the work consisted of a 6-sack mix, with 7 gallons of water per sack and a placing consistency of about 3 inches of slump for the floors and 6 inches for the walls. For walls under 15 inches thick, floors under 10 inches, and all beams and columns, a 1½-inch maximum size of aggregate mix was specified. Two-inch-maximum material was permissible for all walls 15 inches and over, and in floors, 10 inches and over.

In all cases, rock aggregates and sand were well graded with definite permissible sieve tolerances.

The concrete was placed on the job with the help of a truck crane with an 80-foot boom and a concrete bucket. A low boom was necessary to reach far out over all parts of the work, so a ½-cubic-yard concrete bucket was used.

*C. & E. M. Photo*

**This is the primary sedimentation unit of the new Mesa sewage plant at the forming stage.**

All concrete was cured by water, either by sprinkling, or by leaving the watertight forms in place for a period of seven days.

The new plant is expected to take care of Mesa and its small surrounding communities for many years without further plant expansion.

Some of the important subcontractors and material suppliers on the job included Banks Electric Co. of Glendale, electrical work; Harry Green of Phoenix, painting; Commander Engineering Co. and American Car & Foundry Co., valves and piping; Jeffrey Mfg. Co. and Link Belt Co., sludge removal and cleaning mechanisms; Salt River Pump Co., Cook and Peerless pumps, as well as a Chicago sludge pump.

An A. D. Cook deep-well pump was also installed in a 12-inch well drilled 126 feet deep at the new plant. Water was found 88 feet deep, and it soon rose to 56 feet, staying there without drawdown during a 5-hour test-run period.

Russell Long was Project Engineer on the job for Mark Cockrill; Ben Williams was Resident Engineer for the engineering firm; and J. E. Hoover is City Engineer of Mesa.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Built into the B-G Tamping-Leveling Finisher are advantages that combine to assure superior performance on the widest variety of bituminous paving jobs. For instance . . .

The B-G Finisher *tamps, levels* and *"strikes off"* simultaneously — automatically measures the correct amount of compacted material for the depressions — leaves a level surface that is maintained under rolling and traffic. The B-G Finisher *automatically* adjusts to differences in the sub-grade and lays to the established grade.

There are other important advantages. For the whole story of B-G Finisher performance, see your Barber-Greene distributor.

***Positive Traction***
*Crawlers have the traction to push loaded trucks up grades while unloading . . . plus adequate control of steering necessary on any job.*

***Large Hopper***
*Five-ton hopper saves delays, allows Finisher to operate between truck loads.*

***Dual Controls***
*The B-G Finisher may be operated from either side — for easier control while matching previous mat.*

***Wide-Range Utility***
*For all bituminous jobs — from sheet asphalt to stabilized mixes — the B-G Finisher is economical, efficient and adds to the quality of the road.*

BG BARBER • GREENE COMPANY • AURORA, ILLINOIS

## Research Report Covers Asphalt Paving Mixtures

Research Report No. 7-B of the Highway Research Board presents a symposium on the design and control of asphalt paving mixtures and their role in the structural design of flexible pavements. The papers composing this symposium were prepared by the Corps of Engineers, Department of the Army.

The topics for the papers are as follows: selection of test equipment, laboratory study of asphalt paving mixtures, asphalt-stability test section, correlations of laboratory and field data, detailed test procedures for design and field control of asphalt paving mixtures, the practical application of the design method of asphaltic mixtures to pavement construction, and design of asphalt mixes as related to other features of flexible-pavement design. The booklet also includes a list of references and discussions by leaders in the field.

This booklet may be obtained from the Highway Research Board, National Research Council, 2101 Constitution Ave., Washington 25, D. C. The price is $1.80.

## All-Plastic Reflectors

A catalog on Stimsonite all-plastic reflectors for street and highway use is now offered by the American Gas Accumulator Co., 1027 Newark Ave., Elizabeth 3, N. J. The folder points out that the color and moldability of Lucite contribute to the effectiveness of these plastic reflectors, and that its clarity permits light to pass through the smooth front window of the plate to the facets (cube corners) sealed inside.

The 3-color catalog describes completely the construction and design of Stimsonite reflectors and illustrates a variety of applications for them. It stresses their uniformity, wide-entrance angle, all-weather efficiency, and low-cost maintenance.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 54.

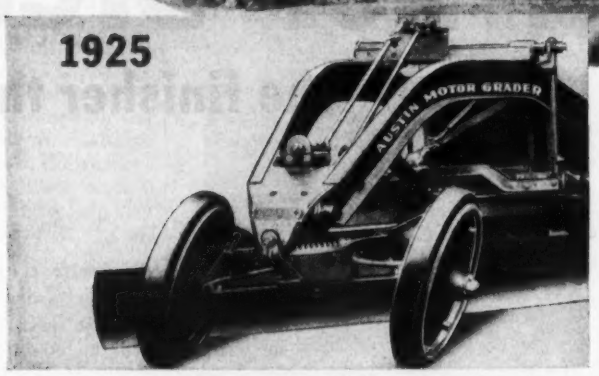
## Waterproofing Protection

A 20-page booklet about the Thoro system for sealing interior and exterior masonry surfaces is offered by Standard Dry Wall Products, Inc., Box X, New Eagle, Pa. It explains that the system is for masonry maintenance, rehabilitation, and surface protection to keep water out of a wall. It uses Waterplug to stop the leak, Thoroseal to fill and seal the surface, and Quickseal for a finished surface.

The composition, application, and uses for each of these products are fully described in the catalog. The Thoro-system guide for the designer and specification writer is given in the center fold. Photographs show before-and-after shots of a variety of installations and also illustrate the application technique for positive water seal.

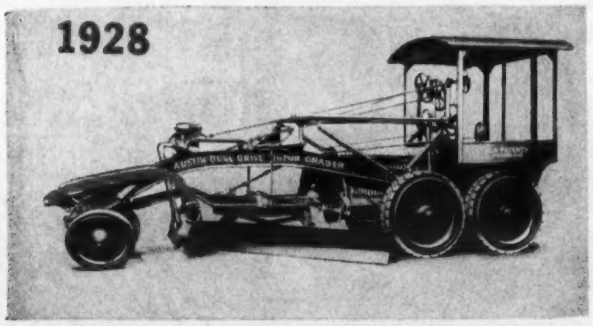
This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 115.


1879 Building a

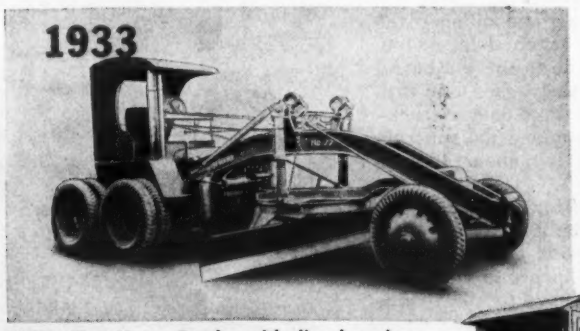



1925—First Motor Grader with leaning front wheels.

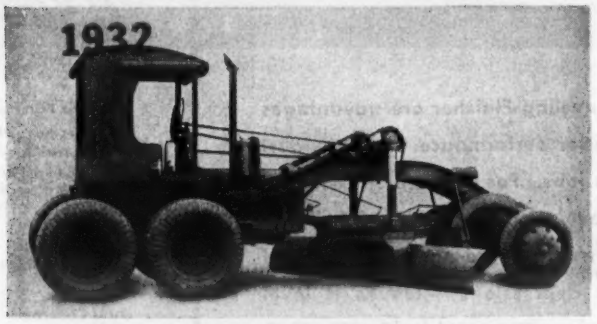
Builder of the world's first road grader in 1879, Austin-Western has pioneered more motor grader features than any other manufacturer, through the years. The motor grader of 1933 was a much better machine than those of the early 20's, but was still almost totally incapable of doing heavy ditching and rough grading. It remained for Austin-Western to take the final step in motor grader design—the all-wheel drive, all-wheel steer "99" Power Grader of 1937, which gave the owner a machine capable of going places where ordinary motor graders couldn't go . . . doing things they couldn't do.




1928—First Motor Grader with dual (tandem) drive.

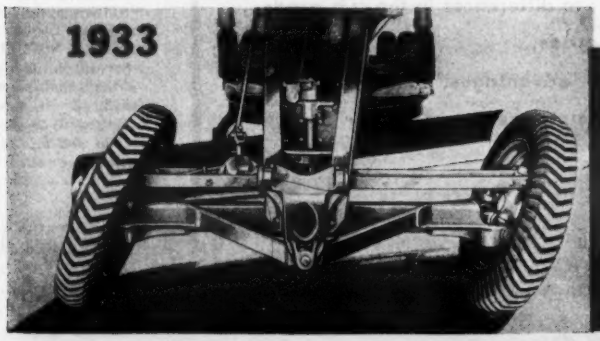



1933—First Motor Grader with diesel engine.




1932—First Motor Grader with hydraulic control.

1937—First All-Wheel Drive, All-Wheel Steer Power Grader.




1933—First Motor Grader with wide front axle.

Motor Grader History is Austin-Western History

### Magnetic Separators And Metal Detectors

A 12-page catalog describing the complete line of Eriez permanent non-electric magnetic separators and electronic metal detectors is now available from the Eriez Mfg. Co., 880 East 12th St., Erie, Pa. Complete specifications regarding weights, sizes, and length comparisons for various chute and spout magnets are given. Also included are tables of operating capacities of permanent magnet installations for pulleys, drums, pneumatic line assemblies, pipeline traps, road and airport sweepers, ferrous filters, and floor sweepers.

All pieces of equipment are fully illustrated by photographs and engineering drawings. Savings possible through the use of permanent magnets, the importance of application engineering, and the essentials of good permanent magents are fully explained. Also discussed are factory engineering and laboratory services offered by the company.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 15.

### Automatic Control Sets

A series of bound technical bulletins illustrating and describing standard automatic and semi-automatic engine controls is now offered by Synchro-Start Products, Inc., 1046 W. Fullerton Ave., Chicago 14, Ill. These controls are designed for use in automatic starting, power-failure starting, automatic cranking, safety stopping, and alarm direction; on power plants, pumps, auxiliary engines or governors.

The catalog explains that the full automatic-starting and safety-stop control set starts or stops the engine according to the operation of a remote switch or relay. It fully protects the engine against abnormal conditions while running, with signal lights to indicate any source of failure. Circuits are provided for all starting and running positions, with provisions for starting a stand-by engine, or for setting an audible alarm upon failure. These units are mounted in a steel cabinet with signal lights and safety switch in the cover.

The purpose and description of each unit is presented in the catalog with electrical diagrams to illustrate the circuit connections. Photographs show the control unit in place for most types of installations.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 58.

### New Concrete Pipe Co.

The Dixie Concrete Pipe Co., Grade Lane, Louisville, Ky., was a September entry in the concrete-pipe field. It will manufacture concrete pipe for sewers, culverts, driveways, and other purposes. Frank B. Emch is the Manager of the new company and James H. Graves is the Sales Representative.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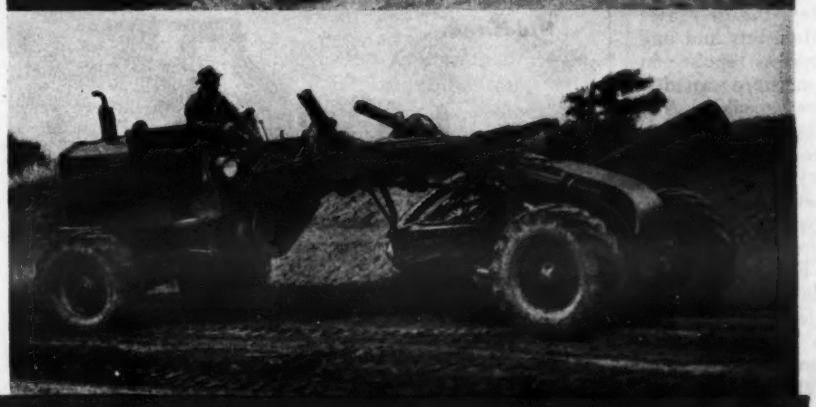
**MASTER "99"**—another new model, combining all of the time- and money-saving features of the "99-H" with the extra power, traction and road speed of its 100 horsepower engine. Tops in performance and value for those who want the best.



BUILDERS OF ROAD MACHINERY

Austin-Western

# AASHO Hits Truck Overloads on Roads

(*Continued from page 1*)

cluding wives, were welcomed to the Lone Star State by A. C. "Jack" White, Mayor of San Antonio, and Allan Shivers, the Texas Governor. Delegates were drawn from all 48 states, District of Columbia, Hawaii, Puerto Rico, and Alaska.

In his opening address, C. W. Brown, AASHO 1949 President and Chief Engineer of the Missouri Highway Department, touched on some of the problems confronting the Association. Foremost of these, said Brown, is the over-limit loading of trucks that "creates a traffic hazard and shortens the life of our pavements many years". According to Brown, "surveys show that roads, the country over, are deteriorating more rapidly than funds are being made available for their rehabilitation or improvement, and that the deterioration is due mostly to the greatly increased use of the highways by heavy motor vehicles.

"As many of you will recall," he continued, "our Association some years ago adopted a set of recommended standards to govern size and weight, and I feel that unless we universally adopt and enforce these recommended standards, we are not protecting the interest of those whom we represent—the highway user."

Brown reviewed the fact that there are 3,000,000 miles of streets and roads in this country, of which only 554,000 miles are the responsibility of the state highway officials; about 83 per cent of all traffic moves over that small mileage. He also said that the Interstate Highway System will require an expenditure of over $11,000,000,000 in the next 20 years.

### Rural Roads

The AASHO President reminded the gathering that Congress recently asked for further information relevant to the extension of Federal Aid for a lower type of local road. In this regard there will be a meeting of the Executive Committee in Chicago this month to develop a national policy position for the AASHO with reference to new Federal-Aid legislation that may be introduced in Congress in January of 1950. The present authorization will be exhausted with the allocation of funds for the fiscal year 1951.

"It is up to the Association," Brown declared, "to find the answer to the rural road program, and how far the Federal and state governments will go in taking over the responsibility for these roads."

### International Flavor

During the continuation of the general session on the afternoon of the opening convention day, the delegates heard talks by two Mexicans and one Britisher. Both Mexicans spoke in Spanish, but translations were provided the audience. The first speaker, Augustin Garcia Lopez, Secretary of Communications and Public Works, Government of Mexico, described the routes of three important new highways recently opened in Mexico.

The other speaker from south of the border was Romulo O'Farrill, President of the Mexican Roads Federation. He stated that the Mexican program of road construction has been essentially a Federal program, and will continue as such until the system of national highways is completed. The Federal government, according to O'Farrill, invests the largest share of the Federal tax on gasoline in the construction and maintenance of the national highway system, which represents about 80 per cent of the highway appropriation. The remaining 20 per cent is granted as Federal aid for state roads on a 50-50 basis.

The British spokesman, Cyril Birtchnell, is Deputy Secretary, Ministry of Transport. In a characteristic understatement Birtchnell mentioned that some "tightness of finance" is holding up the advance of road building in the United Kingdom. He revealed that the U. K. has 183,000 miles of public highways and about 3,500,000 motor vehicles, which develops a serious problem of traffic congestion. There are more vehicles per mile in Britain than in the United States, according to the Secretary, but petrol rationing has restricted the use of private cars so that traffic is not as dense as in this country.

Birtchnell traced briefly the history of road building in the British Isles, starting with rough tracks made before the Christian Era, when tin from Cornish mines was hauled to the seacoast to be put aboard the ships of early Phoenician navigators and explorers. Later came the famous Roman roads which were maintained by the Church during medieval times. From these early road-building efforts there has developed the problem, according to Birtchnell, of bringing into line with modern progress a highway system that was developed long before the motor vehicle.

### The Senate Speaks

Two United States senators also spoke at this session—Dennis Chavez (Dem.), New Mexico, and Garrett L. Withers (Dem.), Kentucky. Senator Chavez suggested that more emphasis be placed on farm-to-market roads, and that politics be kept out of highway affairs. Senator Withers, a former Kentucky Highway Commissioner, stated that Kentucky has reached a point where it can no longer maintain its present roads and build new ones. He urged that the Federal government come to the relief of the states in that respect, and reduce the amounts required of the states to match Federal funds.

Instead of the present 50-50 arrangement, Withers considered that a one-third state and two-thirds Federal, or one-quarter state and three-quarters Federal would be better. The Senator also suggested that higher salaries for state highway engineers were in order. He added that he, too, would like a raise from the Federal government since he found it difficult to live on a senator's salary in Washington.

### Essay Awards

Winning papers in the AASHO's first National Essay Contests were read by their authors, who won free trips to the convention. In the Student Division, whose topic was "What I Think of Highway Engineering as a Career", the award went to Michael Lash, Jr., 24 years old, of Yonkers, N. Y. Lash is a junior-year civil-engineering student at Tufts College, Medford, Mass. Contestants in the Faculty Division wrote on the subject "What I Advise My Students With Regard to Selecting Highway Engineering as a Career". The winner was Emmett H. Karrer, Professor of Highway Engineering, Ohio State University, Columbus, Ohio. Professor Karrer is a graduate of Ohio State University, and has worked for the U. S. Bureau of Public Roads.

### MacDonald Warns

In a two-hour address to the general session of the convention, Thomas H. MacDonald, Commissioner, U. S. Bureau of Public Roads, touched on the steadily increasing number of motor vehicles using our highways, as against the thousands of miles of highways that are deteriorating annually due to this enormous increase in volume and weight of traffic.

The Commissioner estimated that about 40,000 miles of the Federal-Aid system alone should be replaced each year. Last year 21,000 miles were completed. While this fell short of the desired mileage, it actually was an increase of 3,000 miles over the construction completed during the prior fiscal year. Since the end of the war nearly 50,000 miles of Federal-Aid highways have been completed and opened to traffic. This progress was achieved despite such obstacles as rising costs of labor and materials; delays in material delivery; skilled-labor shortage; and a need for competent engineers in many state highway departments.

To offset these factors, MacDonald asserted, several hundred new contractors have entered the highway field since the beginning of 1948; this has resulted in a marked increase in competition, and brought about lower bid prices for the first six months of 1949.

The BPR head mentioned the inadequacy of current revenues, asserting that "we cannot provide for the traffic in expanded quantities and increasing weights in the post-war period with pre-war revenues."

### Highway Overloading Is Stressed

The highway-overloading theme discussed in the general sessions was developed in detail during the committee meeting. At the maintenance and equipment sessions, R. H. Baldock, Oregon State Highway Engineer and Past Pres-

(*Continued on next page*)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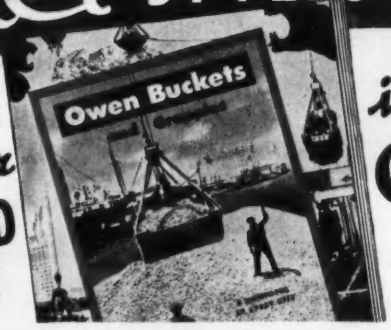


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D. C. Greer, State Highway Engineer of the Texas State Highway Department, was elected President of the American Association of State Highway Officials at its recent annual meeting in San Antonio, Texas.

ident of AASHO, mentioned the criticism that commercial carriers have leveled at highway officials for not permitting greater vehicular loading. In reply, he stated that for the public welfare the highways must not be destroyed to satisfy these special interests. Furthermore, while it is possible to build roads to take any load, he went on, these special interests do not want to pay this extra cost.

He cited vehicle registration statistics to show that this damage to highways is caused by a small minority of highway users. Of the 40,600,000 vehicles in use, 7,300,000 are trucks and buses. In the latter classification, 90 per cent are under 1½ tons in weight. Thus only 2 per cent of all vehicles registered are in the heavy-truck category, and highway departments cannot afford to build roads for this minority, the official emphasized. Baldock pointed out that maintenance costs—$890,000,000 in 1946, and $1,080,000,000 in 1947—are continually increasing. "This terrific bill is growing ever larger," he said, "and we are slipping far behind in building an adequate road system for the rapidly expanding economy of the country."

### Examples of Damage

Baldock also declared that while advocates of larger loads blame destruction on the weather, it is use or abuse that destroys roads. Rex M. Whitton, Missouri Engineer of Maintenance, sustained this statement by citing an example of maintenance costs in his state. Two concrete sections of U. S. 66 and U. S. 63, near where they meet in Missouri, were constructed in the same year by the same contractor with similar design and materials. U. S. 66, a major east-west route across the country, handles heavy truck traffic, while U. S. 63, a north-south route, carries very little commercial vehicular traffic. On U. S. 63, the lightly traveled route, surface maintenance costs average $52 per mile per year. On U. S. 66, over which roll the heavily laden trailer trucks, the cost of surface maintenance is $940 per mile per year.

C. L. Motl, Minnesota Maintenance Engineer, cited similar examples of high maintenance costs due to heavy trucking, and the need for drastic enforcement of load laws and the reduction of axle weights. "The highway officials are well aware of this serious situation," he cautioned, "and should do something about it before the public takes it out of their hands." He also warned manufacturers of construction equipment about building machines too big and heavy for over-the-highway transportation. As an example he mentioned some new earth-moving scrapers weighing 17½ tons even when empty.

Ohio spokesmen scored the steel industry as the biggest violator of unauthorized overloading in that state, and declared that 15 failures of bridge structures last year were due to overloading. The recent enactment of a stricter loading law in Ohio, which went into effect on October 18, will help to remedy that condition, it is hoped.

### Testing Devices

The U. S. Bureau of Public Roads entered the lists against highway overloading with demonstrations on two well constructed models of a bridge and a highway to illustrate the loading problem. These testing devices were explained by Herbert S. Fairbank, Deputy Commissioner of the BPR. On the scale-model metal bridge, various loadings were tested with weighted models of trucks and tractor-trailers to simulate actual conditions both as to gross loads and axle loadings. The tests were conducted for both H-15 and H-20-S16 design loadings.

The device on which the highway loading was illustrated consisted of a foam-rubber pad to simulate the pavement, supported on a stretched rubber diaphragm which simulated a base course under the pavement. The loads were applied through a system of levers and tracer rods, and the resultant deflections were clearly illustrated.

From an inspection of these models, Fairbank asserted, truckers could see why axle loads in excess of 18,000 pounds are destructive to highways. Not only axle loadings, but their spacing is important, he emphasized. Tests on the highway loading device revealed that when axles are spaced too closely together, their respective loads act as a single total load with consequent destructive force. Thus load laws, Fairbank summed up, should take into consideration not only the gross weight of vehicles, but the proper distribution of that weight over the axles.

### Other Models Are Shown

Two other structural models — both

(*Concluded on next page*)


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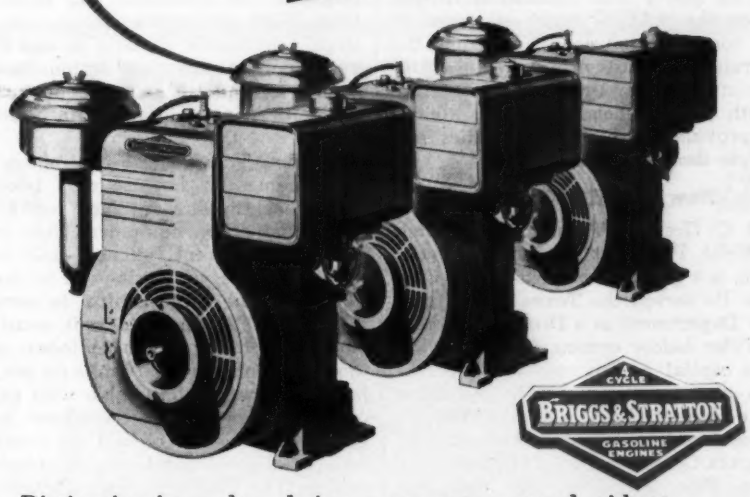


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## AASHO Hits Truck Overloads on Roads

(*Continued from preceding page*)

bridges — were shown at the meeting, and attracted wide-spread interest among the delegates. One, developed by West Virginia, was a model of precast concrete bridges that are used in emergencies such as floods, fire, etc. The light and easy-to-handle parts are stockpiled, and may be quickly and easily erected by common labor.

The other model, designed by the BPR, illustrates a steel bridge that is recommended by the U. S. Army for use in disaster emergencies. This type of bridge is a steel-truss structure that is demountable, and capable of being assembled in a short time.

Along the line of visual education, Rex M. Whitton, Missouri Maintenance Engineer, offered a colored moving picture showing various methods of road-mix bituminous construction as carried out in several different highway divisions in his state.

### Good Roads Associations

At one of the sessions of the Committee of Public Relations and Publicity, representatives from four Good Roads Associations — Charles H. Sells, New York; Harry Ward, Michigan; C. Coykendall, Iowa; and Ike Ashburn, Texas—discussed the work of their associations in promoting better public relations for highways. One of the topics discussed at this committee meeting was the action of the petroleum industry in opposing any increase in gasoline taxes, while at the same time increasing the sale price of gasoline to highway users.

This policy was considered further when the AASHO went on record in its formal resolutions criticizing the petroleum industry for this obstructionist stand, and urging it to cooperate "with public officials in their attempt to provide the highway facilities our people desire and deserve".

### New AASHO Officials

D. C. Greer of Texas, newly elected AASHO President for the one-year term, is a graduate of Texas A&M College. He served the Texas State Highway Department as a District Engineer at Tyler before coming to Austin, the state capital, as Engineer of Road Design and Construction. He has been State Highway Engineer since 1940.

Besides electing James A. Anderson, Virginia Commissioner of Highways, as First Vice President, the delegates chose four regional Vice Presidents. They are: Region 1—Spencer Miller, Jr., New Jersey State Highway Commissioner; Region 2—A. E. Johnson, Chief Engineer, Arkansas State Highway Commission; Region 3—Charles M. Ziegler, Michigan State Highway Commissioner; Region 4—J. R. Bromley, Superintendent, Wyoming State Highway Department.

Members of the Executive Committee were also elected. They include R. H. Baldock, Oregon State Highway Engineer, and Thomas H. MacDonald, Commissioner, Bureau of Public Roads, who will serve until 1954; Samuel C. Hadden, Chairman, Indiana State Highway Commission, and Roy E. Jorgensen, Deputy Commissioner and Chief Engineer of the Connecticut State Highway Department, who will serve until 1953; and W. C. Lefebvre, Arizona State Highway Engineer, whose term expires in 1952. George H. Henderson, Principal Highway Engineer of the Rhode Island Department of Public Works, was re-elected Treasurer.

Following the convention, some 400 delegates and their wives went on a four-day motorcade to Monterrey, Mexico, with a return to San Antonio via the Rio Grande Valley and Corpus Christi. Buses for the trip were provided by the state of Texas.

## Surge-Control Unit For Truck Trailers

A hydraulically operated surge-control device has been designed for use with 11, 12, and 14-inch mechanical brakes, on all types of two and four-wheel trailers with capacities up to 5 tons. This device is made by The United Mfg. Co., 46 Interstate St., Bedford, Ohio. When the towing vehicle slows or stops, a hydraulic cylinder in this new unit simultaneously and automatically applies an equal braking action to the trailer to bring it to a smooth positive stop.

The new Titanic surge-control device is recommended for use with two or four-wheel trailers designed to transport construction equipment. Any one of three different hitches—ball and socket, lunette, or clevis—can be supplied with the surge-control to permit attachment. A complete unit consists of the hitch, hydraulic cylinder and mounting bolts, manual brake for parking, breakaway safety cable with snap connector, and brake equalizer and cable. This device is said to require no special attachments on the towing vehicle. The Titanic releases the trailer brakes when the towing vehicle pulls away, eliminating tendency to drag. An added safety feature is the breakaway cable which actuates the manual parking brake lever to lock the trailer brakes in the event of accidental unhitching.

Further information may be obtained from the company, or by using the Request Card at page 16. Circle No. 96.

## Catalog on Spray Units; Painting or Weed Control

A complete catalog on spray-painting, finishing, and air-service equipment is offered by The Electric Sprayit Co., 1419 Illinois Ave., Sheboygan, Wis. It covers a full line of spray guns, air-compressor units, tank compressors, air transformers, air-line assemblies, insecticide and weed sprayers, and air tools. All of the units in the catalog are fully described and each of the models is illustrated. Possible applications for this type of equipment include maintenance and repair shops and roadside weed-control work.

This literature may be obtained from the company, or by using the Request Card which is inserted at page 16. Circle No. 113.

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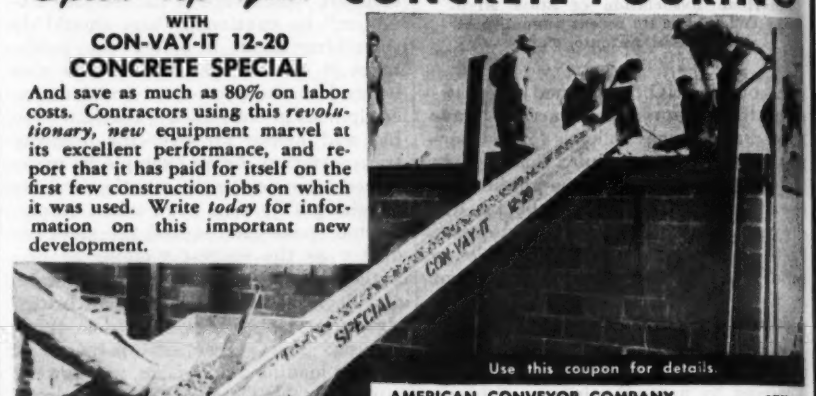

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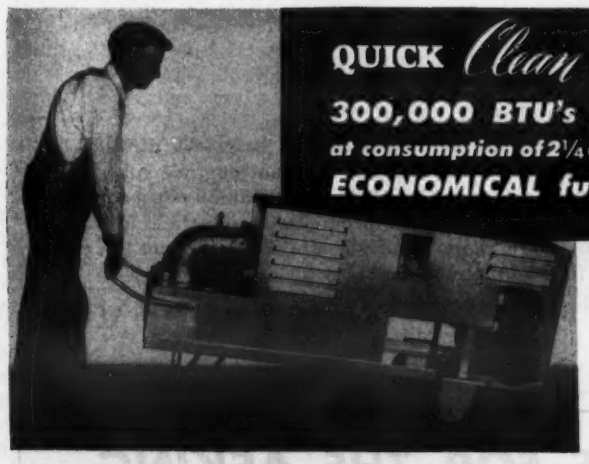

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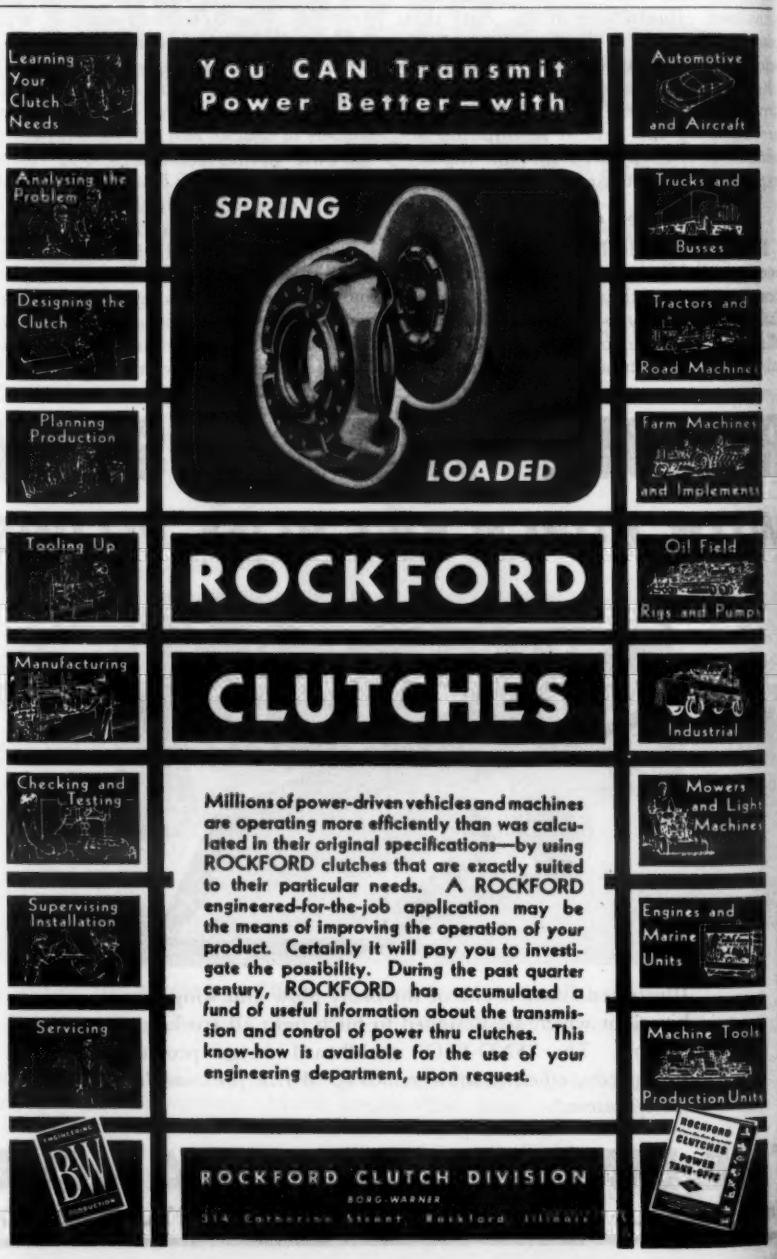
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Structural-steel erection on this new office building for The Mutual Life Insurance Co. of New York progressed at the rate of more than two stories a week. The photo was taken as the steel work was being topped out.

## Steel "Topped Out" On N. Y. Skyscraper

Structural-steel work on the new home office of The Mutual Life Insurance Co. of New York, in New York City, was topped out recently, a little more than three months after the first steel column was placed. The Turner Construction Co., builder of the structure, stated that from the company's observation the job of steel erection done by the Bethlehem Steel Co. set a new post-war record for this kind of work on a major building in New York. The building, 25 stories above ground, involved the equivalent of 31 stories of structural-steel work from the subcellar to the cooling-tower roof.

With the steel work finished and other construction progressing at a rapid pace, the scheduled completion date has been advanced from mid-1950 to next April or May. Mutual Life will occupy about 65 per cent of the total 390,000 feet of office space. The building is on Broadway between 55th and 56th Streets. It will replace the company's offices at 34 Nassau St.

## Data on Compressed-Air Placement of Concrete

The reasons for the importance of the gun in applying concrete and other materials by compressed air are explained in a folder put out by Air Placement Equipment Co., 2525 Southwest Blvd., Kansas City 8, Mo. The 8-page catalog discusses the principle of the Bondact process, its uses, how materials are prepared, and how they are applied.

The patented gun utilizes air and water; as the aggregate is picked up in the gun's air stream, it is hydrated by an atomized spray at the gun nozzle. The hydrated aggregate is immediately deposited. The company points out that the equipment may be used for sandblasting as well as concreting.

The catalog also illustrates and describes both the Bondactor and the Bondactor Junior for metering and feeding pre-mixed aggregate to the gun. They require a 210 and a 60-cfm compressor, respectively. The bulletin deals with their production capacity, the thickness of application, and coverage.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 118.

## New Metallic Seal Protects Level Vial

Development of a metallic-sealed level vial, which is said to increase level accuracy and reduce breakage, is announced by The E. A. Stevens Level Co., Newton Falls, Ohio. Use of the new seal eliminates need for the conventional glass drawn tip which is a great source of level leakage and failures, according to the manufacturer. This seal, it says, will prevent breakage due to wood shrinkage, and will permit longer level usage. It is expected to reduce transit damage and thereby simplify shipping problems. Metallic sealed vials are to be used on all Stevens carpenters' and masons' levels, both wood and aluminun.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 6.

## Plastic Eyeshield

A Skullgard eyeshield for use with Skullgard protective caps or hats has been announced by the Mine Safety Appliances Co., Braddock, Thomas, and Meade Sts., Pittsburgh 6, Pa. Made of transparent plastic, the new eyeshield offers protection against hazardous flying particles, and provides non-fogging vision and wearing comfort.

The M.S.A. eyeshield features a hinge-type device which permits attachment to any M.S.A. Skullgard. When not in use, the eyeshield lies flat against the peak or brim, and is merely flipped downward when needed. Eyeshields may be ordered separately, or attached to M.S.A. Skullgards.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 13.

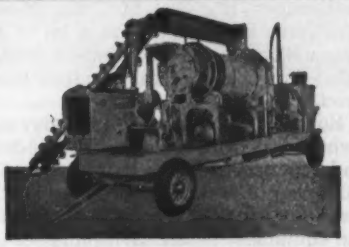
## Tractor Attachments

Literature on two tractor attachments, a post-hole digger and a bulldozer blade, is available from the Danuser Machine Co., 213 State St., Fulton, Mo. The catalog sheets include photographs, specifications, and design features of both attachments.

The Danuser Digger is designed for post-hole digging, setting seedlings, and digging foundation holes for pilings. Augers with diameters from 4 to 24 inches are available.

The Danuser all-purpose blade, controlled from the tractor seat, is used for all phases of terracing, ditching, grading, back-filling, and landscaping work. Both the digger and blade attachments can be mounted on the Farmall H, M, and C; Case VA and VAC; Allis-Chalmers B, C, and WD; and John Deere A, B, G, GM and MT tractor models.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 29.

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Complete units for pavement maintenance. Capacities—4, 8, 12, 25 tons per hour.

OTHER PRODUCTS
FRONT END LOADERS
for Industrial Tractors
HEATING KETTLES
for Asphalt and Tar
AGGREGATE DRYERS
for Stone and Sand
CONCRETE VIBRATORS
Gasoline Engine and Electric Motor Driven Models

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**Vulcan Tools**

A complete line for every type of Rock Drill, Pavement Breaker and Clay Digger.

Vulcan Tool Manufacturing Co.
35-43 Liberty Street, Quincy, Mass.
Branch Offices and Warehouse Stocks.
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34 No. Clinton St. Chicago, Ill.

Electroline—FIEGE
WIRE ROPE CONNECTORS
The LAST WORD in
SAFETY
SPEED
SAVINGS

No heat, acids or complicated equipment required for installation. Ordinary mechanic's tools do the job, safely, even in chemical plants, powder plants and mines, where other methods would be prohibited. And they are safe to use, because they have the highest holding strength of any known wire rope or strand connectors. They assure *savings in installation* because unskilled labor can do the job easily and quickly; *savings in use* because they prolong wire rope life by damping vibration and overcoming rope fatigue at entrance to fitting . . . and because they are reclaimable.

Note ease of installation.

Simply slip the sleeve over the cable, spread the strands, insert and drive in the plug then apply the socket. See what a solid and permanent joint you have by looking at it through the inspection hole put there for the purpose.

Send for new descriptive catalog

Electroline Company
4121 S. LA SALLE ST., CHICAGO 9, ILL.

SNOW REMOVAL!
ACTION... lots of it!

with this EAGLE LOADER

SOON PAYS FOR ITSELF IN TIME AND MONEY SAVED.

- From job to job at truck speed
- Handles any loose material quickly and economically—coal, snow, dirt, gravel, cinders, etc.
- One man operation

*Write for bulletin CE-11*

EAGLE
JAW CRUSHERS · IMPACT BREAKERS
PULVERIZERS · CONVEYORS · LOADERS
CRUSHER CO., Inc.
GALION OHIO·U·S·A

# Good Service Provided For Bonny Equipment

**Preventive Maintenance Stressed as Mechanics Swarm Over Machines On Graveyard Shift**

+ MAINTENANCE, service, and repair of the big fleet of equipment at Bonny Dam (see page 17) is a man-sized assignment. Big Red McCulla, Master Mechanic, is charged with a lot of responsibility, for the equipment investment runs into several hundred thousand dollars.

Routine maintenance on the day and swing shifts, with intensive maintenance and operating repairs on the graveyard shift from 9 p. m. to 5 a. m. when the machines are idle, is the basis on which the equipment repair division is set up.

At the Utah Construction Co. field camp just below the right abutment are five new Butler tin sheds. The first is a main repair shop, and it measures 40 x 100 feet. There is a 40 x 60-foot warehouse, a 40 x 40-foot welding shop, a 40 x 40-foot tire shop which houses Bailey, Inc., and a 20 x 40-foot grease and lubricating room.

Directly outside the lubricating shop is a well equipped grease pit. It is brilliantly lighted by lights in the walls, and by floodlights on four towers over the pit. Every piece of rubber-tired equipment on the dam project goes across this grease pit every night on the graveyard shift. There are no exceptions. Only the large stationary-type machines such as the Euclid loaders stay in the pits on that shift, and they are serviced by one or two mobile units which cover the job several times a day.

There are only two mechanics on the morning shift, because the work is light that shift after the major service of the night before. The swing shift has a crew of 8 men, who make some few repairs and dish out mobile service. The main mechanic force is concentrated on the graveyard shift, and any operator who has some mechanical failure to report leaves complete instructions as he goes off shift.

The McCoy Co., Caterpillar distributor and Euclid representative in Denver, has set up a branch office at Burlington and stocked it with an inventory of parts worth approximately $50,000. This gives the job an excellent opportunity to get spare parts without having to carry too many at the dam. Red McCulla has his own private plane and a landing strip near the project, and he often flies some small part, badly needed, in to the project in his Ercoupe.

Texaco lubricants are being used exclusively. In general, Ursa No. X-10, X-20, and X-30 is being used in the diesel-engine crankcases. Texaco Insulated 10, 20, and 30 goes into the gasoline engines, and up to 50 weight in hydraulic systems. Most of the gear boxes use 80, 90, and 140-weight gear lube, but the gear boxes on the Euclid loaders require Meropa No. 6, a heavy-duty lubricant which will resist the beating it gets in that spot.

Engine oil is usually changed every 60 hours, but some of the newer engines with DeLuxe and Nugent heavy-duty oil filter equipment will run 250 hours before changing. In any case each piece of equipment has its own record in the files of McCulla's office, and he can tell at a glance just what the machines need so far as routine repair is concerned.

Repairs so far have consisted of the replacement of some of the parts which have failed. The heavy-equipment repair shop is equipped with an overhead crane, a metal-cutting saw, a post drill, and plenty of heavy-duty tools. One of the handiest pieces of equipment for repairs, according to McCulla, is a Bucyrus-Erie Hydrocrane on a Chevrolet truck. This hydraulic machine will pick up an engine or any similar part and change it in a minute.

Most of the equipment units are new. When the job is finished about three years hence, McCulla believes that despite all the hours of hard work ahead, the machines will still be in good shape.

He explains his position by saying, "It's the old story that good grease, the best fuel, and factory parts make the cheapest operating cost in the end."

## Grading and Maintenance

A road-equipment catalog has recently been released by the Meili-Blumberg Corp., New Holstein, Wis. It presents the M-B Model PG-10 power grader, the Model 30 maintainer, and attachments for both units.

The grader is powered by a 40-hp gasoline or diesel engine and has five forward speeds and one reverse speed. The maintainer is powered by a 31-hp International tractor engine. Complete information on both units is given in the folder.

Attachments include scarifier, crane hook, bulldozer, backfiller, snow plow, and front-end loader. Both units may also be equipped with a full-vision cab, blade extension, electric lights, and leaning front wheels.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 116.

## Lug and Cable Connector

A circular describing lug and cable connectors for both machines and electrode holders is available from the Perfecto Lug & Cable Connector Co., 2640 W. Van Buren St., Chicago 12, Ill. It explains that the machine terminal lug is easily connected to the positive and negative studs of any welding machine or generator. Cable strands cannot be torn, since the spear does not turn but wedges the strands against the retainer nut. Specifications and prices are included in the bulletin.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 144.

## Concrete-Floor Hardener

Reduction of accidents, production delays, and of maintenance and repair costs resulting from concrete floors becoming rough and rutted is featured in a new 6-page illustrated folder. It is available from the Building Products Division of L. Sonneborn Sons, Inc., 80 Eighth Ave., New York 11, N. Y.

The catalog explains how concrete and terrazzo floors may be protected against wear, deterioration, and dusting by treating them with Lapidolith, a liquid concrete hardener. Laboratory test data in chart form, photographs showing how Lapidolith is applied, its features, and several views of typical industrial floors so treated are included.

This literature on Lapidolith may be obtained from the company, or by using the Request Card at page 16. Circle No. 8.

FLEXCO

BELT FASTENERS AND RIP PLATES

FOR HEAVY CONVEYOR AND ELEVATOR BELTS OF ANY WIDTH

FLEXCO Fasteners make a tight, butt joint of great strength and durability . . . distribute the strain uniformly. Operate smoothly over flat, crowned or take-up pulleys. Made of steel, Monel, Everdur and Promal.

FLEXCO Rip Plates are for repairing and patching damaged belts.

Ask for Bulletin F-100

FLEXIBLE STEEL LACING COMPANY • 4608 Lexington St., Chicago 44, Illinois

Strong, Smooth, Readily Troughing
Order From Your Supply House

NEW! Heating Unit for Winter Jobs

- Ideal for Concrete Work
- Quickly Thaws Out Materials
- Over One Million B.T.U. Output

BEHLEN HEAT BLOWER

$407 FOB Columbus, Nebr.

A sturdy, dependable heating plant. Has many construction uses. Recommended for concrete work in low temperatures. Warms aggregate at batching plant; prevents freezing concrete while setting. Just the thing for drying and curing plaster or paint and other such jobs. Preheats machinery. Burns 1 to 9 gals. distillate or kerosene an hour; furnishes up to 1,100,000 B.T.U.'s direct heat per hour. Built-in fan delivers up to 7,000 CFM at ½ inch water pressure or 5,000 CFM at 5 inches pressure up to 250° F output. Gasoline or electric motor furnished if desired. Adjustable outlet pipe is removable for adapting to fit job. Mounted on skids. Used on Federal and private construction. Almost 3,000 in use on farms dehydrating corn. Beat cold weather delays . . . write, wire for full information . . .

BEHLEN MANUFACTURING CO.
DEPT. 9 COLUMBUS, NEBR.

ANNOUNCING THE NEW LITTLEFORD "SPRAY KING" PRESSURE DISTRIBUTOR

It's here! The new low cost Pressure Distributor—the "Spray King." Once again Littleford is first to offer to Highway Departments and Contractors a low cost unit with features found on most DeLuxe Pressure Distributors.

The "Spray King" has single valve control, a choice of Low Pressure or Torch Type Burners, Full Circulating Vacuum Flow or Standard Suck-Back Spray Bars up to 24 ft. in width. The bars are end-folding or can be non-folding.

Adjustable, manual operated, ground clearance controls for raising and lowering the Spray Bar. Heat Chamber for pump and valves. Filler connection at the rear of the Distributor. These are but a few of the many features of the "Spray King," the new low cost Littleford Pressure Distributor. For further information write for Bulletin Z-14H.

MANUFACTURERS OF

| | "Spray Master" Pressure Distributors | |
|---|---|---|
| "Tankar" Steam Heaters | Highway Brooms | Asphalt Supply Tanks |
| "Kwik-Melter" Roofers Kettles | Tool Heaters | No. 101 Utility Spray Tanks |
| Trail-O-Rollers | Trail-O-Distributors | 84-HD Asphalt Kettles |

BLACK TOP ROAD MAINTENANCE EQUIPMENT SINCE - 1900

LITTLEFORD

LITTLEFORD BROS., INC.
485 E. PEARL ST., CINCINNATI 2, OHIO

# Distributor Doings

### Construction-Equipment Division Closed by Hartford Distributor

The Nicoll-Talcott Corp. of Hartford, Conn., has closed down its Construction Equipment Division in order to devote all its time to the Farm Machinery Division.

The territory it formerly held for the LeTourneau account has been turned over to the Parker, Danner Co. of Hartford, Conn. The Unit Crane & Shovel Corp. account has been assigned to Contractor's Supply Co., Inc., of Waterbury, Conn., and the E. F. Edson Co. in West Springfield, Mass.

### Osgood, General Excavator Dealer

Equitable Equipment Co., construction-machinery distributor of New Orleans, La., is now a southern dealer for the Osgood Co. and the General Excavator Co., Marion, Ohio. The territory which Equitable will serve includes the Louisiana parishes of Beauregard, Allen, Evangeline, St. Landry, Pointe Coupee, West Feliciana, East Feliciana, St. Helena, Tangipahoa, Washington, and all parishes south. In Mississippi the company will cover the counties of Pearl River, Stone, George, Hancock, Harrison, and Jackson.

### Mass. Firm Handles Scaffolding

A new company known as Waco Equipment Co. of New England has been organized by Curlys L. Slocum, Jr., at 70 Black Road, Cohasset, Mass. Mr. Slocum has been appointed franchised distributor of Waco scaffold jacks and Waco tubular sectional scaffolding in the New England states.

### Bob Wicker Becomes Weco Partner

Robert L. Wicker has assumed a partnership in The Weco Equipment Co. of North Hollywood, Calif., distributor of Wood Roadmixers, American motor graders, Reed thermo-electro storage batteries, Pacific wire rope, etc. He was formerly Sales Manager of Bevis Machinery Co. of Los Angeles.

### Harvester Dealer in Charleston

Glenn L. Walter, President of Missouri-Illinois Tractor & Equipment Co., 510 Withers, St. Louis, Mo., has announced the purchase of the International Harvester dealership at Charleston, Mo., formerly operated by H. T. Bryant. The new concern features greatly expanded sales, service, and parts facilities, and 24-hour service. W. P. Webster, formerly Assistant District Manager of International Harvester, is in charge. The M-I Tractor Co. also operates a branch at Quincy, Ill.

### Halladay-Dettman Names Salesman

Halladay-Dettman Co., construction-equipment distributing firm of Sioux Falls, S. Dak., announces that it has engaged Hilton Stemwedel as an engine salesman. Mr. Stemwedel was graduated from the School of Mines at Rapid City, S. Dak., with a degree in electrical engineering.

**Hannibal traveled via elephant, but Frank Rasmussen drove a Unit 1520 truck crane 1,500 miles from the factory in Milwaukee to his equipment and supply company in Salt Lake City. The truck crane averaged 25 mph.**

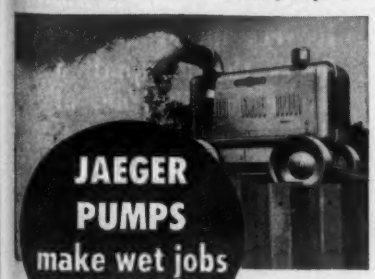
### Drives Truck Crane 1,500 Miles

Frank Rasmussen of the Rasmussen Equipment & Supply Co. reached his office in Salt Lake City, Utah, on a sunny day, very happy about the performance of the new Unit 1520 truck crane which he had driven from the Unit Crane & Shovel Corp. factory at Milwaukee, Wis.

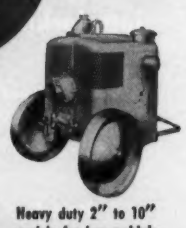
The Unit 1520 had crossed the 1,500 miles without motor trouble or heavy gas consumption. Looking back on his trip, Mr. Rasmussen decided that the

*(Concluded on next page)*

**New 2" aluminum pump weighs 105 lbs., pumps 9000 gph . . . Gives high head performance for price of low head pump.**




Extra power and double priming action to de-water faster. Built to outlast cheaper pumps by thousands of hours.



Heavy duty 2" to 10" models for low or high head requirements. Super-Jet pumps for pressures to 275 lbs. Diaphragm and caisson pumps. Get catalog.

THE JAEGER MACHINE COMPANY
Columbus 16, Ohio

FOR 50 YEARS

SCHRAMM

HAS LED THE WAY WITH

"FIRSTS"

IN AIR COMPRESSOR IMPROVEMENTS

| | |
|---|---|
| 1900 | Independent service and repair shop for Industrial Compressors and Power Plants in Philadelphia. |
| 1908 | First really portable Engine Driven Compressor built. |
| 1917 | Multi-Cylinder Engine Driven Multi-Cylinder Compressors. |
| 1918 | Designed and built SCHRAMM engines for operating SCHRAMM Compressors. |
| 1918 | Portable Compressor with clutch between Engine and Compressor. |
| 1919 | Portable Diesel Engine Driven Compressor. |
| 1923 | Electric starting standard on all engine driven models. |
| 1935 | Built two-staging portable Engine Driven Compressors, also air-cooled single and two stage models. |
| 1936 | Perfected mechanical intake valve, the most progressive improvement in Portable Compressor design. Also eliminated out-moded two stage and air cooled compressors. |
| 1938 | Built live, self-sealing, easy turning Hose Reels. |
| 1940 | Designed large substantial tool boxes for carrying large assortment of air tools. |
| 1949 | The *PNEUMASTAT* another SCHRAMM innovation, that cuts fuel costs up to 50%. Also the SCHRAMM engine and compressor block with interchangeability of parts, became standard equipment on the model #105. |

Model No. 105
De Luxe With
Streamline Tool
Boxes

SCHRAMM INC. THE COMPRESSOR PEOPLE • WEST CHESTER • PA.

## Distributor Doings

(Continued from preceding page)

rain in Iowa and the snow in the Rockies had no effect on the truck crane. So he sat down to write the manufacturer and suggest that it add the term "all-weather" to the description of its product.

### Two Distributors for Carter Co.

Ralph B. Carter Co. has appointed two new distributors for its line of Humdinger pumps. The L. B. Smith Organization of Camp Hill, Pa., will have a part of the eastern Pennsylvania territory and the southern counties of New Jersey. The Industrial Engine & Parts Co. of Chicago has been given the exclusive distributor franchise for part of Indiana and northern Illinois.

Dealers interested in the Carter line may get information from Ralph B. Carter Co., 206 Atlantic St., Hackensack, N. J.

### Morrissey Brothers Reorganize

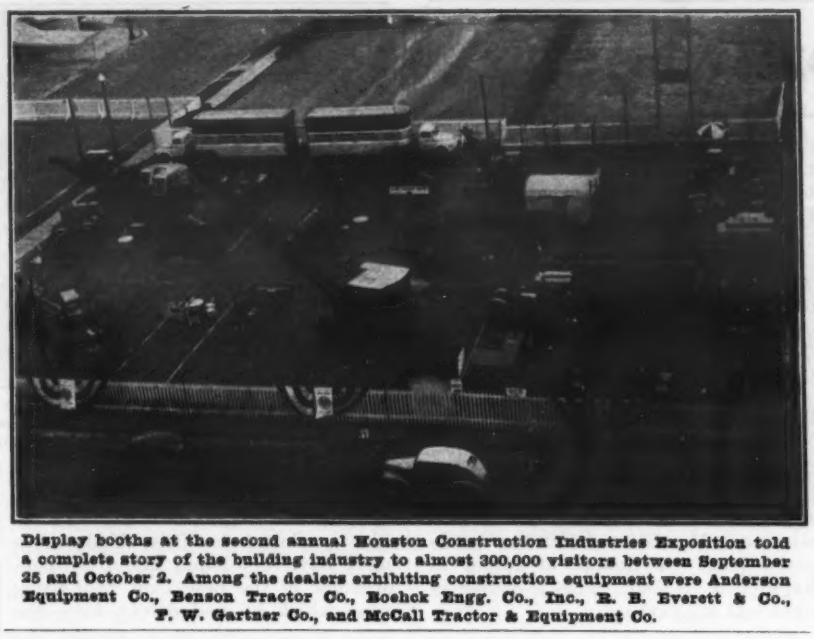
Since the recent and sudden death of James W. Morrissey, the Morrissey Brothers Tractor Co. of Watertown, Mass., has been reorganized. William Morrissey has become President and Leonard Morrissey has become Vice President. Both were graduated from Boston College and started their selling careers in the New England area some 20 years ago. Their firm now handles the complete Allis-Chalmers line, Gar Wood dozers and scrapers, Baker bulldozers, LaCrosse trailers, a full line of Buckeye shovels, ditchers, stone spreaders, Worthington compressors, air tools, and pumps, and Ransome concrete mixers, both portable and truck.

### Represents Sika in R. I. and Conn.

L. B. Keen, Sales Engineer, located at 196 Country Club Drive, Providence, R. I., is now handling the concrete protective coatings and compounds of Sika Chemical Corp. in the states of Rhode Island and Connecticut.

### Minn. Dealer Adds Four New Lines

Ruffridge-Johnson Equipment Co., Inc., Minneapolis, Minn., announces that it has accepted the Minnesota dealership for four new lines. The company will handle the mechanical curb-and-gutter pavers of Dotmar Industries, Inc.; the asphalt distributors and spraying equipment manufactured by E. D. Etnyre & Co.; the pavement wideners of the All-Purpose Spreader Co.; and the pavement breakers made by the R. P. B. Corp.



Display booths at the second annual Houston Construction Industries Exposition told a complete story of the building industry to almost 300,000 visitors between September 25 and October 2. Among the dealers exhibiting construction equipment were Anderson Equipment Co., Benson Tractor Co., Boehck Engg. Co., Inc., R. B. Everett & Co., F. W. Gartner Co., and McCall Tractor & Equipment Co.

### Huber Appoints N. Y. Distributor

The Carswell Truck & Tractor Co., Inc., of 675 Glen St., Glens Falls, N. Y., has been appointed Huber Mfg. Co. distributor for the northeastern section of New York State. The company will handle the complete line of Huber road construction and maintainance equipment.

### Hunt Represents Heil in N. C.

J. B. Hunt & Sons, Inc., of Raleigh, N. C., is now representing The Heil Co. on sales of the Heiliner. Jessie B. Hunt, Sr., founded the firm in 1933 and is its President. Other officers are Harlowe G. Hunt, Vice President and Secretary; Jessie B. Hunt, Jr., Vice President; and George W. Bunker, Executive Vice President and Treasurer.

### Rosenwald-Cooper Appointed

Rosenwald-Cooper, Inc., of St. Paul, has been appointed Minnesota dealer for the Contractors Machinery Co., Inc. It will handle the firm's Trojan patrol as well as angling and straight-blade bulldozers, motor-driven graders, and snow plows.

Rosenwald-Cooper also carries the Snogo snow plow and manufactures the Nelson post driver.

## Spirally Welded Pipe

A new 4-page folder on Spiral-Weld pipe is offered by the Taylor Forge & Pipe Works, P. O. Box 485, Chicago 90, Ill. Bulletin 493 explains that Spiral-Weld pipe is made in a wide variety of end styles designed for all usual or any special joint types. The folder shows the sizes and wall thicknesses which are available and also shows Taylor Forge fittings and flanges intended for use with the Spiral-Weld pipe. Typical applications for this lightweight high-strength pipe are included.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 56.

## Industrial Power Units

A specification bulletin No. 1025, describing the Model 425-6A industrial power unit, has recently been issued by Minneapolis-Moline Co., Minneapolis 1, Minn. Featuring removable cylinder blocks and valve-in-head design for easy servicing, this 6-cylinder unit has a 4¼-inch bore, a 5-inch stroke, and a piston displacement of 425.5 cubic inches. The report covers the complete and detailed list of specifications, a dimensioned drawing, and power rating curves for the Model 425-6A.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 87.


Shunk Snow Plow and Ice Removal BLADES

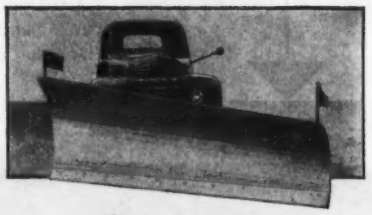
Proved record of superior performance. Made of specially developed steel to withstand severe service conditions.

FOR ALL TYPES AND MODELS OF SNOW PLOWS
Various widths, lengths, thicknesses--flat or curved--standard or special--punched ready to fit your machine.

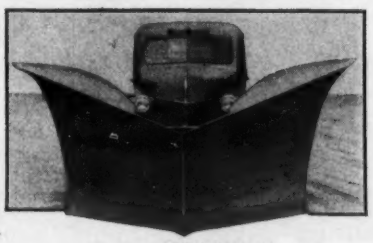
SHUNK SAW-TOOTH ICE BLADE
Amazingly effective. Thoroughly breaks up and removes heavy, slippery ice and snow formations. Replaces all types of snow plow blades or maintenance units. Write for Bulletin and name of nearest Distributor.

Shunk MANUFACTURING COMPANY
ESTABLISHED 1854
BUCYRUS, OHIO.

SNOW REMOVAL with GLEDHILL plows



The well known, efficient one way plow. Fits all trucks • Easily attached • Fold back hoist • Automatic blade trip • Sturdy, all-welded construction.



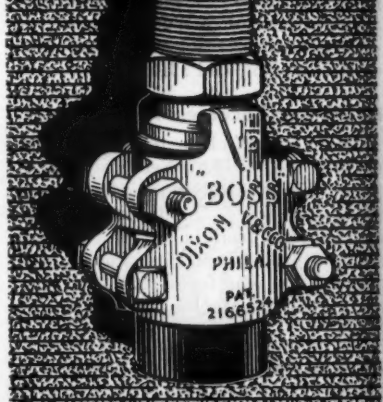
Gledhill's V-Plow — Wide wing span • Heavy duty construction • Interchangeable • Direct lift • Reasonably priced.

Write for complete specifications!

THE GLEDHILL ROAD MACHINERY CO.
GALION, OHIO

Now! BUY used equipment
SELL used equipment
ACQUIRE competent personnel
thru
THE TRADING POST, CONTRACTORS & ENGINEERS MONTHLY
470 4th Avenue, New York 16, N.Y.

GENUINE... in Name and Service



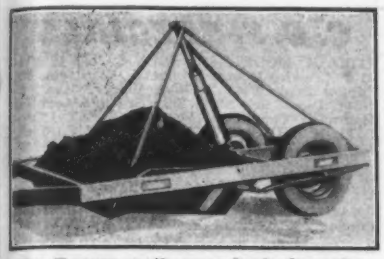

*"BOSS" Male Coupling Style MX-16

Its very appearance reflects the unequalled power and efficiency of this original Dixon product. Designed to fit straight-end hose, and furnished with super-strong "Boss" Offset and Interlocking Clamps.

Stocked by Manufacturers and Jobbers of Mechanical Rubber Goods.

*Reg. U. S. Pat. Off.

DIXON VALVE & COUPLING CO
Main Office and Factory: PHILADELPHIA 22, PA.



The Energy earth scoop loads from the front and dumps from the rear. It handles ¾ cubic yard and is hydraulically operated from any small-size tractor.

## Small Earth Scraper

A new earth-moving tool called the Energy hydraulic earth scoop is manufactured by the Energy Farm Equipment Co., Monticello, Iowa. It will handle dirt, gravel, sod, and sand, and is designed for filling, ditching, digging, and small soil-conservation jobs.

The Energy scoop loads, carries, and dumps ¾ cubic yard at one time. It is hydraulically operated from any small-size tractor, and all controls are located at the tractor seat. The two-speed hydraulic cylinder is said to give fast loading and quick dumping. The special offset design gives maximum traction for the rear tractor wheels while loading, because the deeper the cut the greater the downward pull on the rear tractor wheels. The high-tempered-steel cutting edge is designed to permit the entire weight of the scoop to rest upon it for positive soil penetration. The machine loads, dumps, and spreads without stopping, loading from the front and dumping from the rear.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 145.

## Safety Spectacles

A new safety spectacle made of Optilite, an optically correct safety plastic, is now offered by the United States Safety Service Co., 1215 McGee St., Kansas City 6, Mo. Saf-I-Specs are designed to resist impact and piercing. They are lightweight and may be worn over prescription glasses.

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Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 1.

## Screen-Cloth Bulletin

A new catalog describing woven-wire screen cloth has just been issued by the Robins Conveyors Division of Hewitt-Robins, Inc., 270 Passaic Ave., Passaic, N. J. Many of its 16 pages are devoted to tables which indicate the sizes of openings available for a given diameter of wire. Included are recommendations concerning the wire diameter to select for a specific type of service—processing sand, stone, and other granular materials. Bulletin No. 113-A also describes an enamel-coated screen cloth, a new product for processing materials which have a combined corrosive and abrasive action difficult to withstand with unprotected wire.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 143.

## Asphalt Institute Engineer

Arvin S. Wellborn is now Managing Engineer of the Pacific Coast Division of The Asphalt Institute, the head office of which is located in New York City. His territory includes Washington, Oregon, California, Arizona, and Nevada. Division offices are in San Francisco, Seattle, and Los Angeles.

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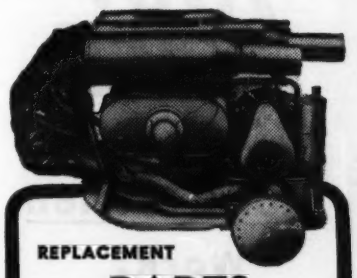

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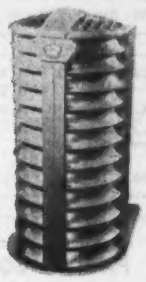

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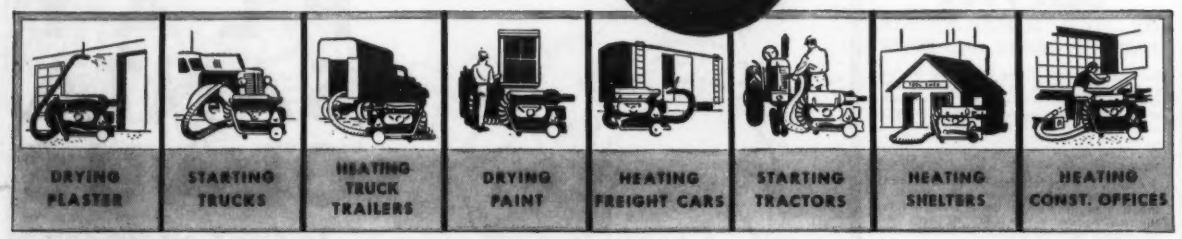


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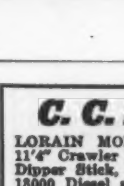

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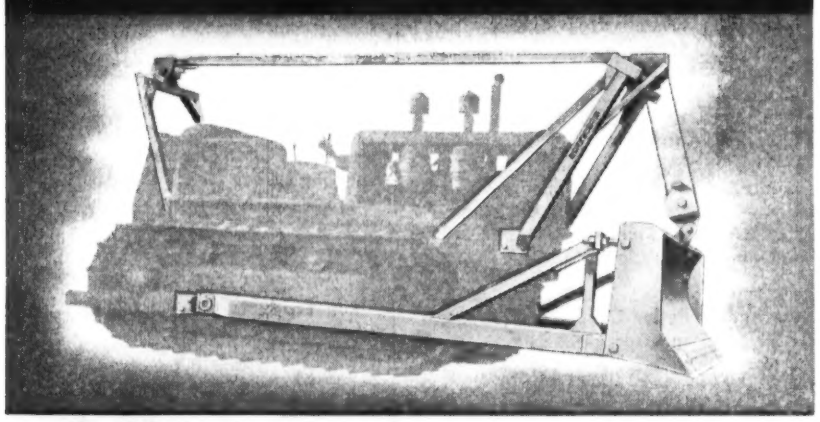

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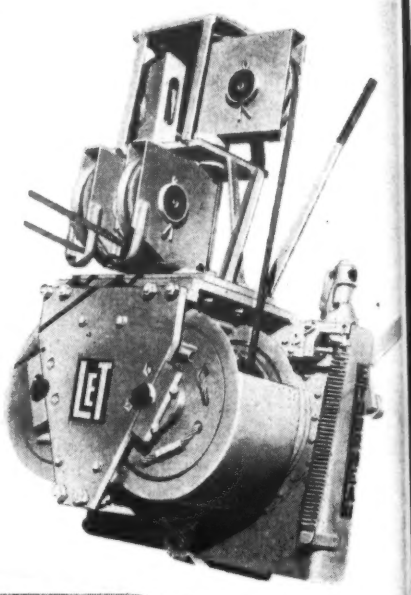

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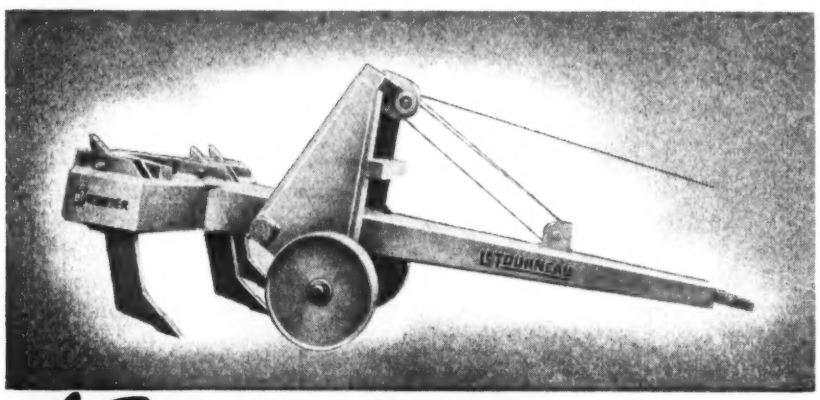


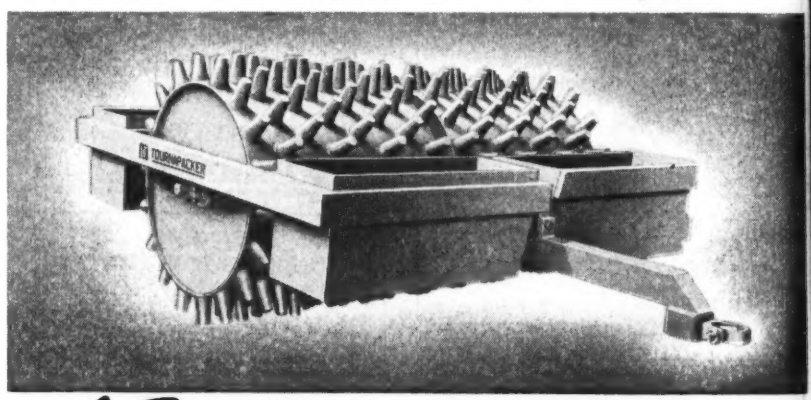


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